SONY.

DIGITAL AUDIO MIXER
DMX-E2000

OPERATION MANUAL   English
1st Edition
Serial No. 10001 and Higher (UC)
Serial No. 30001 and Higher (EK)

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Table of Contents

About This Manual

Purpose and intended audience

This manual is the operation manual of the DMX-E2000 digital audio mixer.
It explains how to construct a video editing system using the DMX-E2000 and how to mix and output audio input signals.
This manual is intended for operators and engineers at production companies who have some knowledge of or experience with operating professional audio and video editing equipment.

Organization

This manual is organized as follows:

Overview
Presents the special features of this manual.

Location and Function of Parts and Controls
Simply defines the functions of the parts and controls of the DMX-E2000.

Menus
Explains the menu configuration and details the items used to set the system and adjust the input signals.

Signal Flow

Preparations
Describes how to incorporate the DMX-E2000 into a digital editing system and perform system settings.

Operations
Explains how to input, adjust, crossfade, and output audio input signals.

Snapshots
Describes how to register and recall the control settings (snapshot).

Editor Control
Explains how to control an editing system including the DMX-E2000 using an editor.

Specifications

Conventions

This manual uses the conventions shown below.

AUTO button — Buttons and switches used for operations
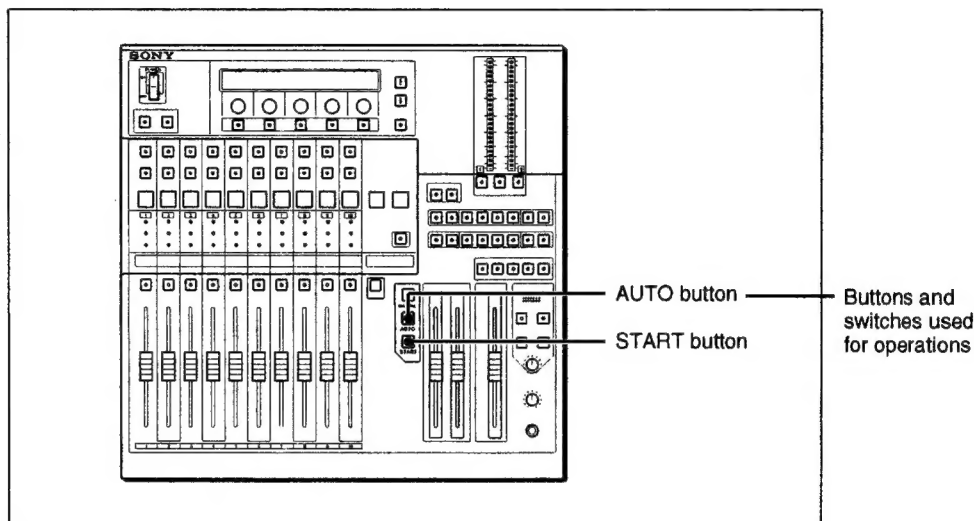
START button

1 Press the TRANS. knob to go to the TRANS. sub-menu.

Menu display —

TRANS.	CURVE	TYPE
	-3dB	X'FADE

Sequence of operations —

2 Press the START button. ————————— Operation

The button indicator flashes and automatic transition begins. —— Results or detailed explanation of the operation

Information necessary for operations or additional information

Note

If you press the MANUAL button, transition is interrupted during the execution of automatic transition or editor contorl.

Select the output signal level of a SEND bus
Select in the channel access menus.

Sections and manuals for reference ———— See "⑥ LEVEL1/LEVEL2" in channel access menu on page 15.

Operation manual format

Reference

A maintenance manual should accompany this manual. Refer to the maintenance manual for technical information about the DMX-E2000.

Overview

Compactness

The DMX-E2000 consists of a control section and signal processor combined into a single unit that can be mounted in a standard 19-inch rack.
The control panel is simply constructed so that a variety of functions can be performed with the five knobs used in menu operations.

Direct connection to digital audio equipment

The DMX-E2000 can be connected to D-1 or D-2 format digital VTRs (i.e. DVR-20, DVR-2000, etc.), digital BETACAM VTRs (i.e. DVW-A500, DVW-A510, etc.), and digital audio equipment (i.e. PCM-7030, etc.) for simple configuration of a digital system without the use of an analog/digital converter.

Sampling frequency selection

You can set the sampling frequency to either 44.1 or 48.0 kHz. This allows correspondence to audio signals output from digital VTRs and digital audio recorders.

Sufficient input and output

The DMX-E2000 accepts and processes the digital audio signal input from up to 20 channels (16 line and 4 auxiliary channels). These input channels, for example, can be used to simultaneously connect four VTRs, a CD player, and a DAT recorder.
You can mix the audio input signals on two channels and assign them to your choice of four output channels. The DMX-E2000 provides four groups of 4-channel buffer output, enabling simultaneous output of digital audio to four VTRs.
You can also use external digital effects equipment via connection to the SEND output connector.

Test signal generation

You can simply check the external equipment with the DMX-E2000 by generating a sine-wave signal (0.4, 1, 8, or 12 kHz) from the built-in digital signal generator.

Overview

ESAM II[1] protocol serial interface

The DMX-E2000 is equipped with standard ESAM II protocol serial interface to support mixing operations from an external editor.
You can connect a BVE-910, BVE-2000, BVE-9000, or BVE-9100 editing control unit to the DMX-E2000. The ESAM II interface communicates the control commands from the editor.

Built-in sampling rate converter

A 20-bit precision sampling rate converter can be applied to the four channels of auxiliary input.

Fader learn function

The DMX-E2000 has a transition learn function that enables storage and reproduction of a transition fader movement.

Flexible transition control

The DMX-E2000 has a PGM (program) and PST (preset) fader used to perform four types of manual transition. You can set the transition mode to single or continuous transition using either both faders or only the PGM fader.

Self diagnostics function

The DMX-E2000 has a self-test function that uses signal looping for a strength test of signal processing.

Snapshot function

The DMX-E2000 has a snapshot function that enables you to store and recall certain control panel settings. Up to 99 different control panel settings can be stored as snapshots. Also, an editor can be used for snapshot control via ESAM II protocol.

Built-in MS (Mid-Side) decoder

The DMX-E2000 has an MS decoder for use with a stereo microphone. You can discretionately enable the MS decoder to directly input MS microphone audio and process the audio signals. The DMX-E2000 also has a mode that allows you to adjust the sound field localization of normal stereo using an MS encoder.

1) Abbrievation for Editing Suite Audio Mixer

Control Panel

Menu control section

Control Section

❶ POWER switch

❷ EDITOR ENABLE button and indicator

❸ PARALLEL ENABLE button and indicator

❹ Menu display window

❺ Control knobs for menu operations

❻ ↑ and ↓ buttons

❼ HOME button and indicator

❽ Ø button and indicator

❾ FILTER button and indicator

❿ EQ button and indicator

⓫ SEND 1/SEND 2 buttons and indicators

Meter section

⓰ Peak level meters

⓱ LINE button and indicator

⓲ MONITOR button and indicator

⓳ TONE button and indicator

Matrix section ⓬ Matrix ACCESS buttons and indicators

⓭ SOURCE matrix buttons and indicators

⓮ LINE matrix buttons and indicators

⓯ MONITOR matrix buttons and indicators

Monitor section

⓴ DIM button and indicator

㉑ MUTE button and indicator

㉒ MONITOR SELECT buttons and indicators

㉓ MONITOR LEVEL control

㉔ HEADPHONES jack

Talk back section

㉕ Built-in talk back microphone

㉖ TB OUT button and indicator

㉗ LINE OUT button and indicator

㉘ Talk back SEND1 and SEND2 buttons and indicators

㉙ TB LEVEL control

㉚ MASTER fader

Input signal control section

㉛ DISPLAY button and indicator

㉜ PRESET button

㉝ PROGRAM button

㉞ LOCAL buttons and indicators

㉟ Fader ACCESS buttons and indicators

㊱ Channel select buttons

㊲ EQ/FIL indicators

㊳ DELAY indicators

㊴ SEND indicators

㊵ Channel status display windows

㊶ PFL buttons and indicators

㊷ SHIFT button and indicator

㊸ Channel faders

Transition section

㊹ Transition duration display window

㊺ MANUAL button and indicator

㊻ AUTO button and indicator

㊼ START button and indicator

㊽ PST fader

㊾ PGM fader

Control Panel

7

Control section

❶ POWER switch
Press the ON side to turn the power on and the OFF side to turn the power off.

❷ EDITOR ENABLE (editor control select) button and indicator
Enables control operations from the editor connected to the REMOTE connector.
Press to light the indicator and enable control from the editor. The items for editor control can be individually set in the menus.
See the "EDITOR ENABLE" sub-menu in the "Menus" section on page 21 for details on how to select the items for control.

❸ PARALLEL ENABLE (external equipment control select) button and indicator
Enables control operations from the external device connected to the PARALLEL REMOTE connector.
Press to light the indicator and enable control from the connected device.

Menu control section

❹ Menu display window
Displays the menus, sub-menus, and corresponding parameters.

❺ Control knobs for menu operations
Used to select the menu and sub-menus and to set the parameters shown in the menu display window.
Press, turn, or hold down and turn a control knob as directed to select a menu or adjust a parameter.
See the "Menus" section on page 14 for details about the menus, sub-menus, and parameters.

❻ ↑ and ↓ buttons
Press to change from menu to menu.

❼ HOME button and indicator
Press to return to the previous menu anytime during menu setting operations.
Also, use this button to go from a channel access menu to the set-up menu.

❽ Ø button and indicator
Reverses the phase of the input signals.
Press this button to light the indicator and reverse the signal phase.

❾ FILTER button and indicator
Enables the filters for operation. Every channel has both a high-pass and notch filter.
Press to light the indicator and enable the filter on the channel(s) with the lit fader ACCESS button(s).
You can set the cut-off frequency in the channel access menus.
See "Adjusting the filters" in the "Operations" section on page 33 for details on how to set the cut-off frequency.

❿ EQ (equalizer) button and indicator
Enables the equalizers for operation. Every channel has a 3-band equalizer.
Press to light the indicator to enable the equalizer on the channel(s) with the lit fader ACCESS button(s).
See "Adjusting the equalizers" in the "Operations" section on page 32.

⓫ SEND 1 and SEND 2 buttons and indicators
Press to select the desired output channel.
The indicator lights and the signals of the channel (1 or 2) with the lit fader ACCESS button are output from the SEND connector.

Matrix section

⓬ Matrix ACCESS buttons and indicators
Press the button of the channel you wish to access when the channels selected with the fader ACCESS buttons are set to stereo.

⓭ SOURCE matrix buttons and indicators
Press to assign the source (S1 or S2) selected with the fader ACCESS buttons to either channel bus 1 or 2 or both buses. The indicator corresponding to the selected source and assigned bus light.
See "Specifying two groups of buses" in the "Operations" section on page 35.

⓮ LINE matrix buttons and indicators
Press to assign the mix buses (MIX 1 and MIX 2) to output lines (L1, L2, L3, or L4). The indicators corresponding to the assigned signals light.
See "Assigning the output line" in the "Operations" section on page 36.

⓯ MONITOR matrix buttons and indicators
Press to select which signals (IN 1 and IN 2) to output to the MONITOR 1 and MONITOR 2 (OUT1 and OUT2) connectors. The indicators corresponding to the selected output connector and signals light.

Meter section

⓰ Peak level meters
Indicate the signal output level.
Use the LINE and MONITOR buttons to select one of the display modes.
You can set the user conditions for meter display. See "Setting the user conditions for the peak level meters" in the "Preparations" section on page 27.

⓱ LINE button and indicator
Press to light the indicator and display the line signal output level on the meters.

⓲ MONITOR button and indicator
Press to light the indicator and display the monitor output signal level on the meters.

⓳ TONE button and indicator
Press to light the indicator and output a 400 Hz, 1 kHz, 8 kHz, or 12 kHz reference level sine wave to the line ouput as a test signal.
Set the test signal frequency and level in the menus.
See "Setting the test signal level and frequency" in the "Preparations" section on page 27.

Monitor section

⓴ DIM button and indicator
Press to light the indicator and decrease the monitor signal level output by 20 dB.

㉑ MUTE button and indicator
Press to light the indicator and mute the output signals being monitored.

㉒ MONITOR SELECT buttons and indicators
Press to select the signals to be monitored. The lit indicator indicates the corresponding signals.
SOURCE: Press to monitor source signals. The PFL signal selected using the fader PFL buttons are output to the MONITOR OUT connector. The indicator lights when you press a PFL button or select source from the editor.
LINE: Press to monitor the line signals. The button indicator lights when you select LINE (MIX OUT) from the editor.
SEND: Press to monitor the output signals from the SEND connector.

㉓ MONITOR LEVEL control
Turn to adjust the audio signal level output from the MONITOR connectors and HEADPHONES jack.

㉔ HEADPHONES jack (stereo phone jack)
Connect to the headphones used for monitoring.

Talk back section

㉕ Built-in microphone
An electret condenser microphone used for talk back. Select the output destination using the TB OUT, LINE OUT, SEND1, or SEND2 button.

㉖ TB OUT (talk back output) button and indicator
Press to light the indicator and output audio from the built-in microphone to the TB OUT connector. Signal output from the MONITOR connectors is muted automatically.

㉗ LINE OUT (line output) button and indicator
Press to light the indicator and send audio from the built-in microphone to the OUTPUT connector. Signal output from the MONITOR connectors is muted automatically.

㉘ Talk back SEND1 and SEND2 buttons and indicators
Press to light the indicator and send audio from the microphone to the SEND 1 or SEND 2 bus and output from the SEND connector. Signal output from the MONITOR connectors is muted automatically.

㉙ TB LEVEL (talk back level) control
Turn to adjust the audio output level of the microphone.

㉚ MASTER fader
Slide to adjust the master audio output level.

Input signal control section

㉛ DISPLAY button and indicator
Press to change among the three display modes in the channel status display windows.

㉜ PRESET (preset bus selection) button
Assigns the signals to a preset bus.
Press and light this button. Next, press the desired channel select button(s) to assign the corresponding channel(s) to a preset bus. When you press a channel select button, the button lights yellow.

㉝ PROGRAM (program bus selection) button
Assigns the signals to a program bus.
Press and light this button. Next, press the desired channel select button(s) to assign the corresponding channel(s) to a program bus. When you press a channel select button, the button lights red.

㉞ LOCAL buttons and indicators
Press to light the indicator and go to local mode.
Local mode disables the selected channel from control and snapshot recall from the editor.
When you press a LOCAL button, that channel can only be controlled from the control panel. Press the button again to turn off the indicator and cancel local mode.

㉟ Fader ACCESS (setting access) buttons and indicators
Use these buttons to select the input channel for various setting operations.
Press the button(s) of the desired channel(s) to light the indicators and enable setting of the following items.
• Trim, pan-pot, and fader depth setting
• Delay setting
• Equalizer and filter adjustment
• Signal phase reverse setting
• Send setting and adjustment

• Source matrix
The delay, equalizer, filter, trim, and fader depth settings can be copied from one channel to the others.
See "Checking and Adjusting the Input Signals" in the "Operations" section on page 33 for details on how to select and copy the setting items.

㊱ Channel select buttons
Press to assign the corresponding fader channel to a program or preset bus.
When the PROGRAM button is lit, the channel select button you press lights red and that channel is assigned to a program bus.
When the PRESET button is lit, the channel select button you press lights yellow and that channel is assigned to a preset bus.
You can assign a channel to both a program and preset bus. In this case, the buttons simultaneously light red and yellow.

㊲ EQ/FIL (equalizer/filter) indicators
Light when you activate the equalizers or filters on the selected channels.

㊳ DELAY indicators
Light when you set the delay in the channel access menu to 0.1 frames or more.

㊴ SEND indicators
Light when you assign the selected channels to a SEND bus by pressing the SEND 1 or SEND 2 button in the menu section.

㊵ Channel status display windows
Indicate the status of each channel.
Press the DISPLAY button to change among the following three display modes.
Source mode: Displays the name of the device assigned to the corresponding channel fader.
Machine assign mode: Displays the machine number assigned to the corresponding channel fader for control from the editor.
You can also display the original information about the AES/EBU signals. See "Displaying source ID codes" in the "Operations" section on page 32.
Input signal and level mode: Displays the information related to the input AES/EBU format digital audio signals as shown below.

Shows the relationship between the position of the
channel fader and the actual signal level when you
recall snapshot data and the fader is in trim mode.
∇: The fader position is higher than the recalled
  level
∆: The fader position is lower than the recalled level
—: The fader position and recalled level are equal
Displays the fader mode.
A (absolute mode): The fader position and level are
  equal
T (trim mode): The fader position and level are not
  equal

AES/EBU channel status (right channel, channel B)

AES/EBU channel status (left channel, channel A)

⓵ PFL (pre-fader listen) buttons and indicators
Press to light the indicator and directly monitor the
input channel signals.
When the SOURCE indicator is lit, the pre-fader
listen bus interrupts monitor buses 1 and 2
allowing you to directly monitor the input signals.
Follow the SOURCE matrix setting procedures
when assigning signals to the monitor buses.

⓶ SHIFT button and indicator
You can set the front side (channels 1 through 10)
and back side (channels 11 through 20) of the 10
channel faders.
Press this button to light the indicator and alternate
between the front and back side of the faders. Set
channel 1 through 10 when the SHIFT indicator is
off and channels 11 through 20 when the SHIFT
indicator is lit.

⓷ Channel faders
Slide to adjust the input levels of channels 1
through 10. To go to trim mode, recall snapshot
data or press the SHIFT button.
You can simultaneously adjust two channels (i.e.
left and right channel audio) with one fader by
setting stereo fader mode in the menu.
*See " Assigning Input Signals to Channel Faders" in
the "Operations" section on page 29.*

Transition section

⓸ Transition duration display window
Indicates the time needed to crossfade an output
signal from a program bus to a preset bus or vice
versa (transition duration) as well as the type of
transition.
*See "Transition" in the "Operations" section on
page 38 for details on how to set the transition duration.*

**⓹ MANUAL (manual transition) button and
   indicator**
Press to light the indicator and enable manual
transition.
Use the PGM and PST faders to crossfade the
program and preset buses during manual transition.
There are four types of manual transition: single
and continuous transition performed with both the
PGM and PST faders and single and continuous
transition performed with only the PGM fader.
Select the type of transition in the set-up menus.
*See "Manual transition" in the "Operations" section
on page 38.*

**⓺ AUTO (automatic transition) button and
   indicator**
Press to light the indicator and enable automatic
transition.
*See "Automatic transition" in the "Operations" section
on page 40.*

**⓻ START (transition start) button and
   indicator**
Press to start automatic transition from the DMX-
E2000.
The indicator flashes during transition and goes off
after transition finishes.

⓼ PST (preset) fader
Slide to adjust the level of the preset bus.

⓽ PGM fader
Slide to adjust the level of the program bus.

Location and Function of Parts and Controls

Connector Panel

3 TB OUT connector
2 OUTPUT connectors
1 INPUT connectors

4 SEND connector
5 MONITOR 1 and MONITOR 2 connectors
6 AUX INPUT connectors
7 AUX INPUT IEC958 connectors

8 PARALLEL REMOTE connector
9 RS-232C connector
10 REMOTE connector

14 ~AC IN connector
13 ⏚ (ground) terminal
12 WORD REF IN/OUT connectors
11 VIDEO REF connectors
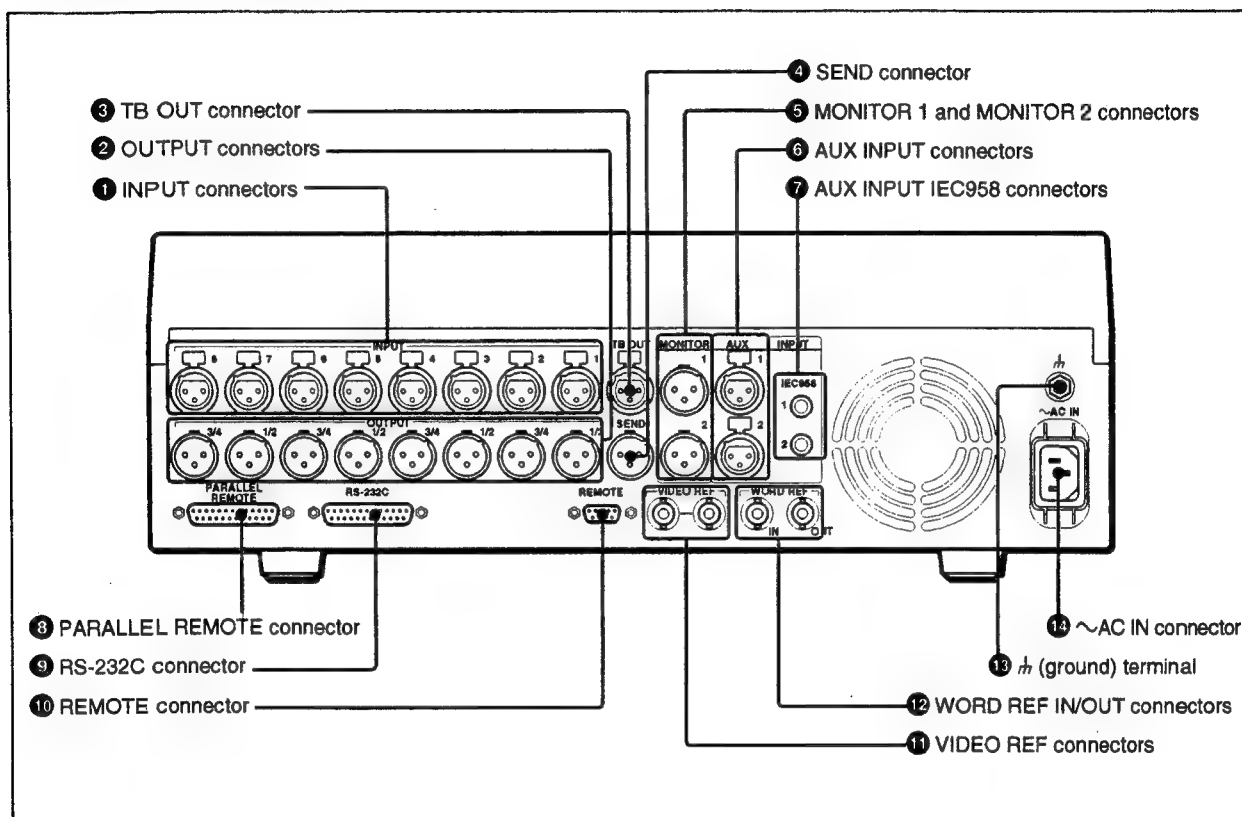
Connector panel

1 INPUT connectors (XLR-3-31)
Accept AES/EBU format digital audio signals.
There are eight INPUT connectors that accept
the 4-channel input signals from a maximum of 16
channels (four VTRs).

2 OUTPUT connectors (XLR-3-32)
Supply AES/EBU format digital audio signals.
There are eight OUTPUT connectors. The signals
output from the CH 1/2 and CH 3/4 connectors
function as one group enabling identical audio
signal output from four connector groups.
The DMX-E2000 supplies identical signals to a
maximum of four digital VTRs for correspondence
to the 4-channel audio of a digital VTR.

**3 TB OUT (talk back output) connector
(XLR-3-32)**
Supplies the audio from the talk back microphone
when the TB OUT button is lit.

4 SEND connector (XLR-3-32)
Supplies the AES/EBU format digital audio
signals on a SEND bus when a SEND indicator is
lit. When the talk back SEND 1 or SEND 2
indicator is lit, the audio from the talk back
microphone is output.

**5 MONITOR 1 and MONITOR 2 connectors
(XLR-3-32)**
Supply analog audio to external monitoring
equipment.

⑥ AUX INPUT (auxiliary input) connectors (XLR-3-31)

Accept AES/EBU format digital audio signals.
You can apply a built-in sampling rate converter to these signals if they have varying sampling frequencies.
See "Setting the specifications for auxiliary input" in the "Preparations" section on page 27.

⑦ AUX INPUT IEC958 (IEC 958 auxiliary input) connectors (RCA phono jack)

Accept IEC958 format digital audio signals.
You can apply a built-in sampling rate converter to these signals if they have varying sampling frequencies.
See "Setting the specifications for auxiliary input" in the "Preparations" section on page 27

⑧ PARALLEL REMOTE connector (D-sub 25-pin)

Accepts and supplies parallel remote signals.

⑨ RS-232C connector (D-sub 25-pin)

Accepts and supplies RS-232C format signals.

⑩ REMOTE connector (D-sub 9-pin)

Connect to an external editor that communicates via ESAM II protocol.

⑪ VIDEO REF (reference video signal input) connectors (BNC type)

Accept video signals used as reference signals.
If you do not need to input or supply reference video signals to other video equipment from the DMX-E2000, always terminate one of the connectors with the supplied terminator.

⑫ WORD REF IN/OUT (reference word sync signal input/output) connectors (BNC type)

IN: Accepts word sync signals as reference signals.
OUT: Supplies the word sync signals synchronized with the system reference signals.

⑬ ⏚ (ground) terminal

⑭ ∿AC IN (AC power input) connector

Connect to the AC power source using the supplied AC power cord.

Use the menus to perform basic settings and various operations.
The menus are divided into two sections: channel access menus and set-up menus. Also, several sub-menus fall under each set-up menu.
The figure below simply outlines the menu configuration and explains how to operate each item.
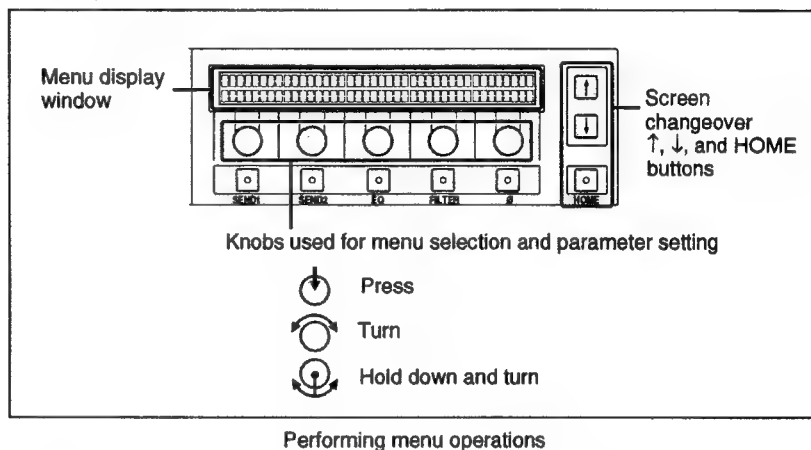
Performing menu operations

Channel Access Menus (when a fader ACCESS button is lit)

There are three channel access menus. Press either the ↑ or ↓ button to change among the menus.
To go from the set-up menu to the channel access menu section, press a fader ACCESS button.
To adjust or select a parameter setting, either press, turn, or hold down and press the corresponding control knob as specified.
The setting items contained in the channel access menus are as follows.
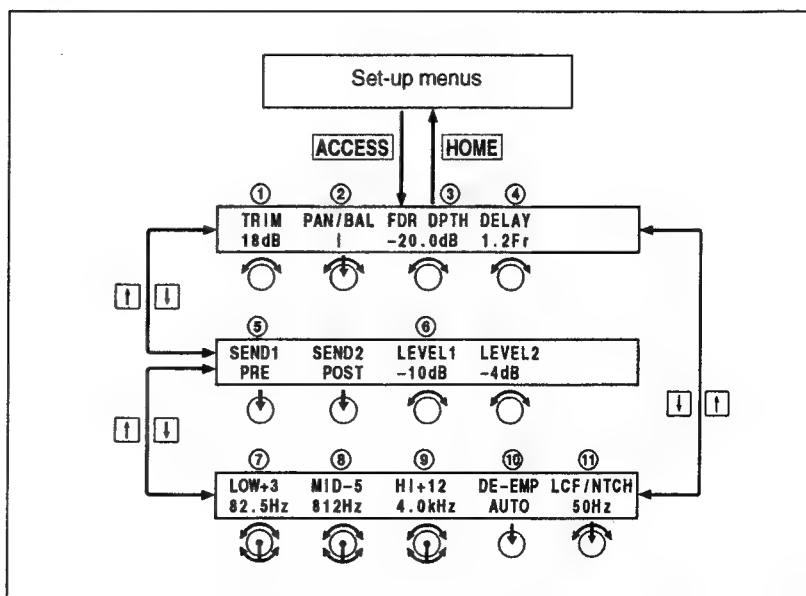
Configuration of channel access menus

① TRIM

Fine-adjusts the input signal level within a range of ±18 dB.

② BAL/PAN (balance/pan-pot)

Adjusts the left and right channel balance when you set the channel fader to STEREO and the pan-pot when set to MONO (monaural).
Turn to adjust the mark indicating the pan-pot or stereo balance. Press the knob to return the mark to the center setting.
Press the SOURCE matrix buttons 1 and 2 to light both indicators to adjust the pan-pot.
To output audio signals on a single bus, press either SOURCE matrix button 1 or 2 to light the indicator and return the setting to the center value.

③ FDR DPTH (fader depth)

Sets the minimum level of fade out during transition in a range from 0 dB (OFF) to −∞.
See "Performing voice-over (fader depth setting)" in the "Operations" section on page 42.

④ DELAY

Sets the delay on each channel in a range from 0 to 5.0 frames for NTSC and 0 to 4.2 frames for PAL in 1.0 frame increments.

⑤ SEND1 and SEND2

Sets the output to the SEND connector on channels SEND 1 and SEND 2 to pre-fader listen (PFL) or post-fader listen (POST).

⑥ LEVEL1 and LEVEL2

Adjusts the SEND 1 and SEND 2 signal levels on each channel in a range from +10 dB to −∞.

⑦ LOW (low frequency range)

Adjusts the low frequency range.
Turn to boost or cut the signal level within a range of ±15 dB in 1 dB increments.
Hold down and turn the knob to adjust the center frequency for LOW in a range from 20 Hz to 330 Hz.
See "Adjusting the equalizers" in the "Operations" section on page 32.

⑧ MID (middle frequency range)

Adjusts the middle frequency range.
Turn to boost or cut the signal level within a range of ±15 dB in 1 dB increments.
Hold down and turn the knob to adjust the center frequency for MID in a range from 200 Hz to 3.3 kHz.
See "Adjusting the equalizers" in the "Operations" section on page 32.

⑨ HI (high frequency range)

Adjusts the high frequency range.
Turn to boost or cut the signal level within a range of ±15 dB in 1 dB increments.
Hold down and turn the knob to adjust the center frequency for HI in a range from 1 kHz to 16 kHz.
See "Adjusting the equalizers" in the "Operations" section on page 32.

⑩ DE-EMP (de-emphasis)

Selects whether or not to de-emphasize the input signals.
AUTO: Automatically goes to ON or OFF according to the emphasis setting placed on the input signals.
ON: De-emphasizes the input signals regardless of whether an emphasis setting has been placed on the input signals.
OFF: Does not de-emphasize the input signals regardless of whether an emphasis setting has been placed on the input signals.
Normally, set this setting to AUTO.

⑪ LCF/NOTCH (high-pass/notch filter)

Selects the high-pass filter or the notch filter and adjusts the cut-off frequency.
Turn the knob to adjust the cut-off frequency of the selected filter in the ranges shown below.
High-cut filter: 21 Hz to 330 Hz
Notch filter: 50, 60, 100, 120, 150, or 180 Hz
See "Adjusting the filters" in the "Operations" section on page 33.

Menus

Set-up Menus (when the fader ACCESS buttons are off)

Channel Access Menu

ACCESS ⇧   ⇩ HOME

① ② ③ ④

Set-up menu 1

| SYSTEM | USER | MON.BAL | DUR |
| SET-UP | SET-UP | I | 5:06 |

⇩ ⇩ ⊘ ⊘

↓ ⇒
↑ ⇐

HOME

Set-up menu 2
(See page 17)

⇧ HOME

⑤

| USER | RECALL | USER | USER | USER |
| SET-UP | | 1 | 2 | 3 |

⊘

⑥

| CHANGING | NO | YES |
| SET UP? | | |

⇩ ⇩

⇧ HOME

⑦ ⑧ ⑨ ⑩ ⑪

System setting change sub-menu

| MACHINE | FADER | METER | TONE | SYSTEM |
| ASSIGN | ASSIGN | | | |

⊘ ⊘ ⊘ ⊘ ⊘

⇧ HOME

⑫

| MACHINE | MACH-1 | MACH-2 | MACH-3 | MACH-4 |
| ASSIGN | | SELECT | | |

↑ ↓ ⊘ ⊘ ⊘ ⊘

| MACHINE | MACH-5 | MACH-6 | MACH-7 | MACH-8 |

↑ ↓ ⊘ ⊘ ⊘ ⊘

| MACHINE | MACH-9 | MACH-10 | MACH-11 | MACH-12 |

↑ ↓ ⊘ ⊘ ⊘ ⊘

⑬

| FADER | CH-1 | CH-2 | CH-3 | CH-4 |
| ASSIGN | MIC-1 | MIC-2 | | |

↑ ↓ ⊘ ⊘ ⊘ ⊘

| FADER | CH-5 | CH-6 | CH-7 | CH-8 |
| ASSIGN | | | | |

↑ ↓ ⊘ ⊘ ⊘ ⊘

| FADER | | | CH-9 | CH-10 |
| ASSIGN | | | | |

↑ ↓ ⊘ ⊘

⇧ HOME

⑭ ⑮ ⑯ ⑰

| FDR CH9 | INPUT | NAME | MODE | |
| CN-5L | MONO | VTR5 | MS-LR | RETURN |

⊘ ⊘ ⊘ ⊘

⇧ HOME

⑱ ⑲ ⑳ ㉑

| SYSTEM | SELF | Fs | REF. | REF.V |
| 1 | TEST | 44.1kHz | VIDEO | PAL |

↑ ↓ ⊘ ⊘ ⊘ ⊘

㉒ ㉓ ㉒ ㉓

| SYSTEM | AUX INPUT-1 | AUX INPUT-2 |
| 2 | SRC ON AES/EBU | SRC ON IEC-958 |

↑ ↓

㉔

| SYSTEM | STORE | USER | USER | USER |
| 3 | | 1 | 2 | 3 |

↑ ↓ ⊘ ⊘ ⊘

㉕ ㉖

| SYSTEM | PARITY | LCD |
| 4 | EVEN | CONTRAST |

↑ ↓ ⊘ ⊘

HOME ⇧

㉗ ㉘

| TONE | | LEVEL | FREQ |
| | | -20dB | 0.4kHz |

⊘ ⊘

HOME ⇧

㉙ ㉚ ㉛

| METER | | PK HOLD | AUTO | REF.MARK |
| | | ON | | ON |

⊘ ⊘ ⊘

Configuration of set-up menu 1

Set-up menu 1
(see page 16)

⬇
⇒
⬆
HOME

	①	②	③	④	⑤	
	TRANS.	MANUAL TRANS.	LEARN	EDITOR ENABLE	SNAPSHOT ENABLE	Set-up menu 2

⬆ HOME

⬆ HOME

		⑥	⑦
TRANS.		CURVE -3dB	TYPE X'FADE

⬆ HOME

	⑧	⑨	⑩	⑪
MANUAL TRANS.	1-FADER ON	2-FADER	1-EDIT	CONT. ON

⬆ HOME

	⑫		
LEARN	STORE USER1	STORE USER2	STORE USER3

	⑲	⑳		㉑
SNAPSHOT	STORE 98 99	RECALL 11 12		SNAPSHOT ENABLE

⬆ HOME

		㉒	㉓	㉔
SNAPSHOT ENABLE		TRANS. ON	DURATION ON	SOURCE ON

		㉕	㉖	㉗
SNAPSHOT ENABLE		MONITOR OFF	MACHINE ON	LEVEL ON

⬆ HOME

		⑬	⑭	⑮
EDITOR ENABLE		TRANS. ON	DURATION ON	SOURCE ON

		⑯	⑰	⑱
EDITOR ENABLE		MONITOR OFF	SNAPSHOT OFF	LEVEL ON

Configuration of set-up menu 2

To go from a channel access menu to the set-up menus, press the HOME button.

To set or select a setting item, either press, turn, or press and hold down the corresponding control knob as specified.

The items found in the set-up menus are as follows. (The circled numbers in the previous two diagrams represent the sequence of explanation.)

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Set-up menu 1

1-① SYSTEM SET-UP (system settings)
Press to go to the CHANGING SET UP? menu to confirm your desire to change the settings.

1-② USER SET-UP (user settings)
Press to go to the USER SET-UP sub-menu to recall the user settings.

1-③ MON.BAL (monitor balance)
Turn to adjust the output balance to the MONITOR 1 and MONITOR 2 connectors. Press the knob to return the balance marker to the center setting.

1-④ DUR (transition duration)
Adjusts the time taken for transition. The transition duration also appears in the transition duration display window.
Hold down and turn the knob to change the seconds value.

USER SET-UP (user setting recall) sub-menu

1-⑤ USER 1, USER 2, and USER 3 user setting registers 1, 2, and 3)
Press to recall the data stored in user setting registers 1, 2, or 3.
See "User Registers" in the "Operations" section on page 45.

1-⑥ CHANGING SET UP? (confirm to change settings) menu
Used to confirm whether to change the system settings or not.
If you desire to change the settings, press the knob corresponding to YES. The display goes to the system setting change sub-menu. If you desire not to change the settings, press the knob corresponding to NO. The display returns to set-up menu 1.

System setting change menu

1-⑦ MACHINE ASSIGN (machine assignment)
Press to go to the MACHINE ASSIGN sub-menu.

1-⑧ FADER ASSIGN (fader assignment)
Press to go to the FADER ASSIGN sub-menu.

1-⑨ METER
Press to go to the METER sub-menu.

1-⑩ TONE (test signal)
Press to go to the TONE sub-menu.

1-⑪ SYSTEM
Press to go to the SYSTEM sub-menu.

MACHINE ASSIGN (machine assignment) sub-menu
Used to assign the machine numbers set from the editor to the respective channel faders when controlling the DMX-E2000 from an external editor. This menu consists of three screens: MACH-1 through MACH-4, MACH-5 through MACH-8, and MACH-9 through MACH-12.

1-⑫ MACH-1 through MACH-12 (machine numbers 1 through 12)
Press the knob corresponding to the machine number you want to assign to a channel fader. "SELECT" appears underneath that number. Next, press the fader ACCESS button of the desired channel and the machine number appears in the channel status display window as "M-machine number."
See "Setting the machine numbers (MACHINE ASSIGN)" in the "Editor Control" section on page 51.

FADER ASSIGN (fader assignment) menu
Used to assign the sources connected to the INPUT and AUX INPUT connectors to each channel fader.
This menu consists of six screens. Initially, you can go to the three fader assignment displays for channels 1 through 10. Press the SHIFT button to light the indicator and go to the remaining three screens for channels 11 through 20.

1-⑬ CH-1 through CH-10 (channel faders 1 through 10)
Display the machine name currently set for each fader.
Press the knob of the desired channel to go to the source setting sub-menu.

Source setting sub-menu

1-⑭ FDR CH1/INPUT (channel fader number/input connector)

Assigns the input signals to the channel fader selected in the FADER ASSIGN menu.
The channel fader number, type and number of INPUT connectors of the source assigned to a fader, and the stereo/monaural setting appear in this display.
Turn the knob to select the above conditions and press the knob to fix the settings.
See "Assigning Input Signals to Channel Faders" in the "Operations" section on page 29.

1-⑮ NAME (machine name)

Sets a 4-character machine name for the selected fader channel.
Turn the knob to change the displayed name and press the knob to move the cursor. You can display the AES/EBU source ID by setting the first character to an asterisk "*".
See "Assigning the Input Signals to Channel Faders" in the "Operations" section on page 29.

1-⑯ MODE (MS encoder/MS decoder select mode)

Press to select whether or not to use the MS encoder and MS decoder.
NORMAL: The input signals bypass the MS encoder and decoder and directly output.
MS→LR: The MS encoder processes and outputs the input signals.
LR→MS→LR: The MS encoder and MS decoder process and output the input signals. Left and right channel signals are processed as MS signals.
See "MS Decoder" in the "Operations" section on page 46.

1-⑰ RETURN

Press to return to the FADER ASSIGN sub-menu.

SYSTEM 1 (system setting menu 1)

1-⑱ SELF TEST (self-diagnostics test)

Press to go to the self-diagnostics test sub-menus.
Refer to the DMX-E2000 maintenance manual for details about the self diagnostics test.

1-⑲ Fs (sampling frequency)

Press to set the sampling frequency to 44.1 kHz or 48.0 kHz.
If you change the frequency setting, the setting flashes. Turn the power off and on again to fix the new frequency.

1-⑳ REF. (reference signal)

Press to select whether to use video signals (VIDEO) or word sync signals (WORD) for the system reference signals.
If you change the reference signal setting, the setting flashes. Turn the power off and on again to fix the new reference signal.

1-㉑ REF.V (reference video signal)

If you set the REF. setting to VIDEO, press the REF.V knob to set the format of the reference video signal to PAL, NTSC, or BW.
If you change the reference video signal setting, the setting flashes. Turn the power off and on again to fix the new video signal.

SYSTEM 2 (system setting menu 2)

Select which format to use for signal input to the AUX INPUT-1 and AUX INPUT-2 connectors and whether or not to use a sampling rate converter.

1-㉒ SRC (Sampling Rate Converter)

Press to select whether or not to use the sampling rate converter.

1-㉓ IEC-958 and AES/EBU (digital audio signal format)

Press to select AES/EBU format or IEC-958 format digital audio signals.

SYSTEM 3 (system setting menu 3)

1-㉔ USER 1, USER 2, and USER 3 (registers 1 through 3)

Press to select the register (non-volatile memory) for storage of the current panel settings, SYSTEM sub-menu settings, and FADER ASSIGN sub-menu settings.
The registers store the data until you store new data in the same register.

Menus

SYSTEM 4 (system setting menu 4)

1-㉕ PARITY
Sets the parity of the ESAM II protocol.
Press to set the parity to odd or even according to the parity of the editor.

1-㉖ LCD CONTRAST (menu screen contrast)
Turn to adjust the contrast of the menu display window.

TONE (test signal) sub-menu

1-㉗ LEVEL
Turn to adjust the test signal level. A reference marker indicates this level on the meters.

1-㉘ FREQ (frequency)
Turn to set the oscillation frequency of the test signal.

METER sub-menu

1-㉙ PK HOLD (peak hold)
Press to set to ON and go to peak hold mode. The highest signal level is held (constantly displayed) on the meters.

1-㉚ AUTO (automatic reset)
Press to set to ON and go to automatic peak hold cancel mode. The peak level display holds, but automatically goes off after several seconds.

1-㉛ REF MARK (reference marker)
Press to set to ON and display a level reference marker on the meters. Set the display level in the TONE sub-menu under LEVEL.

Set-up menu 2

2-① TRANS. (transition)
Press to go to the TRANS. sub-menu.

2-② MANUAL TRANS. (manual transition)
Press to go to the MANUAL TRANS. sub-menu.

2-③ LEARN
Press to go to the LEARN sub-menu.

2-④ EDITOR ENABLE
Press to go to the EDITOR ENABLE sub-menu.

2-⑤ SNAPSHOT
Press to go to the SNAPSHOT sub-menu.

TRANS. (transition) sub-menu

2-⑥ CURVE
Press to set the transition curve to –3 dB or –6 dB.

2-⑦ TYPE
Press to set the type of automatic transition to normal crossfade (X'FADE) or to set the curve (USER 1, USER 2, or USER 3) selected in the LEARN menu.

MANUAL TRANS. (manual transition) sub-menu

2-⑧ 1-FADER (single fader transition)
Press to enable operation of only the PGM fader during manual transition.

2-⑨ 2-FADER (dual fader transition)
Press to enable operation of both the PGM and PST faders during manual transition.

Note
1-FADER and 2-FADER cannot be set to ON at the same time.

2-⑩ 1-EDIT (single editing)
Press to perform a single manual transition.

2-⑪ CONT. (continuous)
Press to enable continuous manual transition.

Note
1-EDIT and CONT. cannot be set to ON at the same time.

LEARN sub-menu

2-⑫ STORE USER 1, STORE USER 2, and STORE USER 3 (user registers)
Press to store the fader movement during manual transition in user registers 1 through 3.

EDITOR ENABLE sub-menu

This menu is related to control operations from an external editor. It consists of two screens.
Press the knob corresponding to each setting to select whether to enable (ON) or disable (OFF) control from the editor.

2-⑬ TRANS. (transition)

Press to set to ON and enable control of the transition start setting.

2-⑭ DURATION

Press to set to ON and enable control of the transition duration setting.

2-⑮ SOURCE

Press to set to ON and enable control of the source setting.

2-⑯ MONITOR

Press to set to ON and enable control of the monitor buses.

2-⑰ SNAPSHOT

Press to set to ON and enable registration and recall of snapshot operations from the editor.

2-⑱ LEVEL

Press to set to ON and enable control of the channel fader level.

SNAPSHOT sub-menu

2-⑲ STORE

Stores snapshot data in the scene registers.
The number on the left represents the current scene and the number on the right normally represents the following scene.
Press the knob to store the current panel settings into the scene register on the right.
Each time you press the knob, the number in the right scene register moves to the position on the left and the right scene register number increases by one digit.
Turn the knob to change the right scene register.
See "Registering Snapshot Data" in the "Snapshots" section on page 48.

2-⑳ RECALL

Recalls snapshot data stored in the scene registers.
The number on the left represents the current scene and the number on the right normally represents the following scene.
Press the knob to recall the scene stored in the scene register on the left.
Each time you press the knob, the number in the right scene register moves to the position on the left and the right scene register number increases by one digit.
Turn the knob to change the right scene register.
See "Recalling Snapshot Data" in the "Snapshots" section on page 49.

2-㉑ SNAPSHOT ENABLE

Press to go to the SNAPSHOT ENABLE sub-menu.

SNAPSHOT ENABLE sub-menu

Enables or disables the snapshot items for recall. This menu consists of two screens.

2-㉒ TRANS. (transition)

Press to set to ON and enable recall of the transition data.

2-㉓ DURATION

Press to set to ON and enable recall of the transition duration data.

2-㉔ SOURCE

Press to set to ON and enable recall of the source control data.

2-㉕ MONITOR

Press to set to ON and enable recall of the monitor bus data.

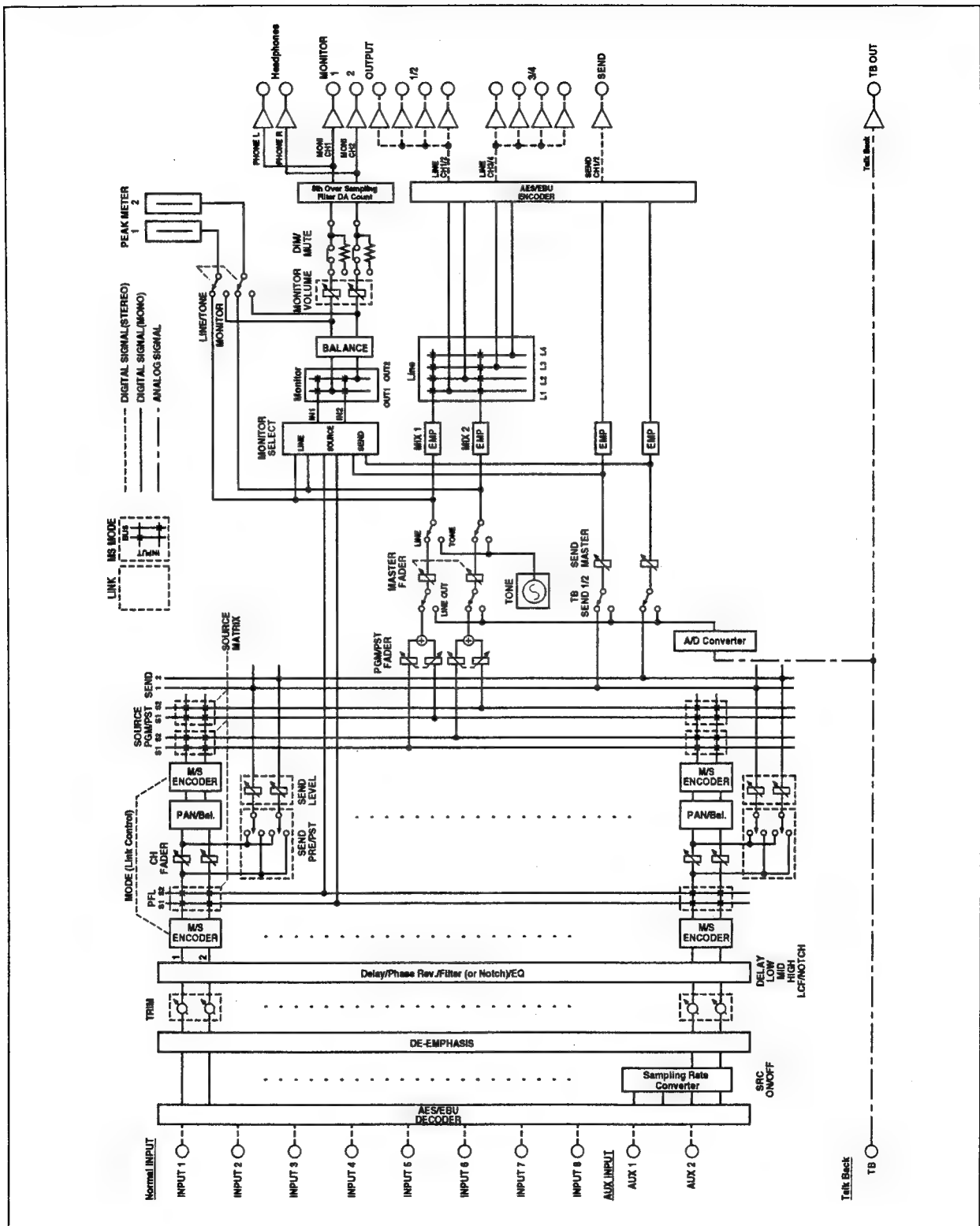### 2-㉖ MACHINE

Press to set to ON and enable recall of the machine assign data.

2-㉗ LEVEL

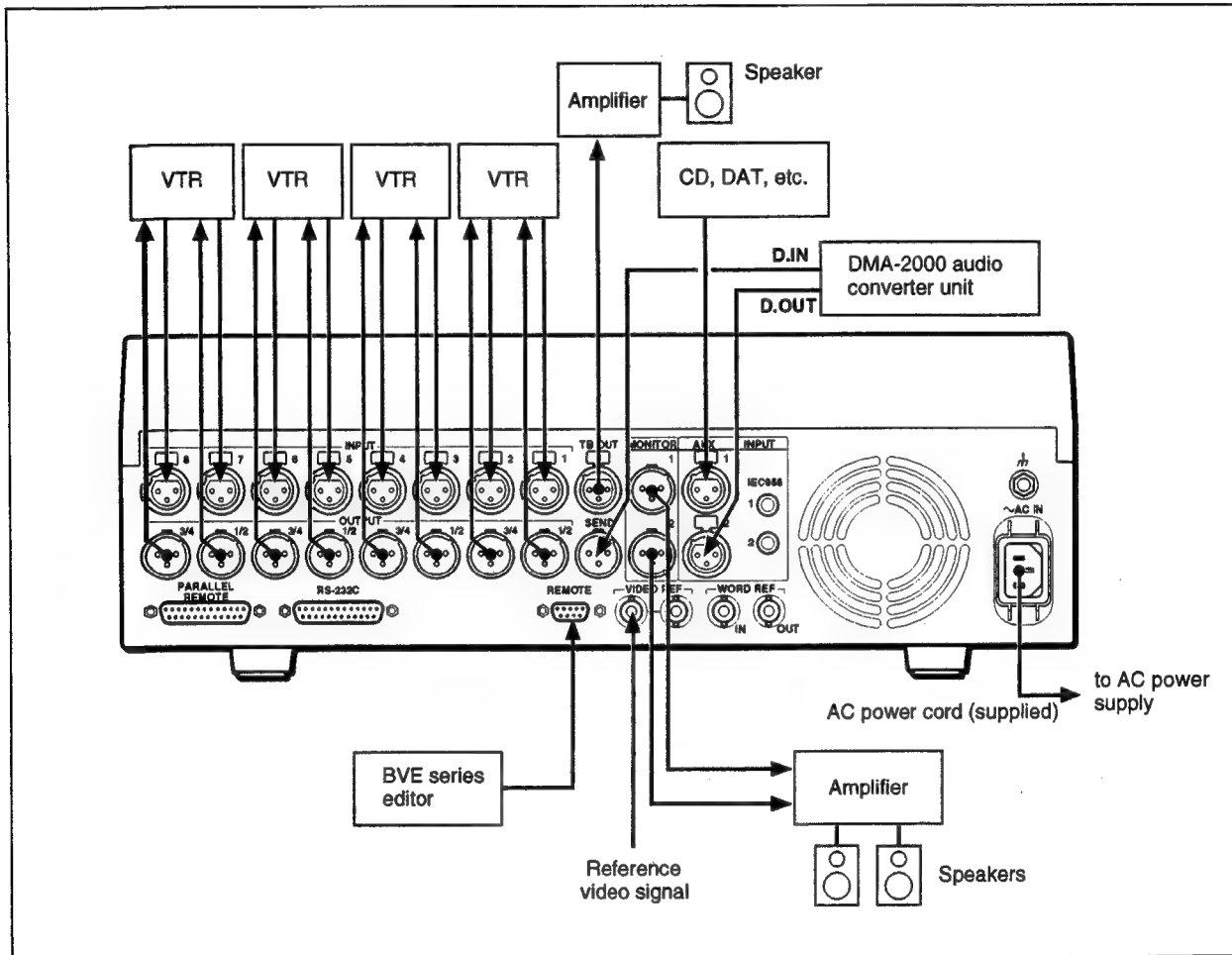Press to set to ON and enable recall of the channel fader level data.

Signal flow

Connections

Connecting the DMX-E2000

Connecting the DMX-E2000

Notes on using the AES/EBU format connectors

Use a cable designed for digital signal connections when connecting digital and video equipment to the AES/EBU format connectors (INPUT, OUTPUT, AUX INPUT, and SEND connectors). A signal error may occur if a different cable such as a microphone cable is used.

VTR setting mode

After you turn the power of the VTRs on, set the VTRs to STANDBY OFF mode and set the audio and video output as follows.
Video output: PB (playback)
Audio output: MUTE (mute audio output signal)
If you set the output to EE mode, the return signals from the DMX-E2000 form an infinite loop which causes the internal circuits to oscillate.

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Editing system configuration

The diagram below shows the connections necessary to construct a digital editing system when using an editor. This system consists of the DMX-E2000, an editor, a digital audio switcher, a digital audio recorder, and several digital VTRs. Refer to the operations manual of the editor for more details on how to configure an editing system.
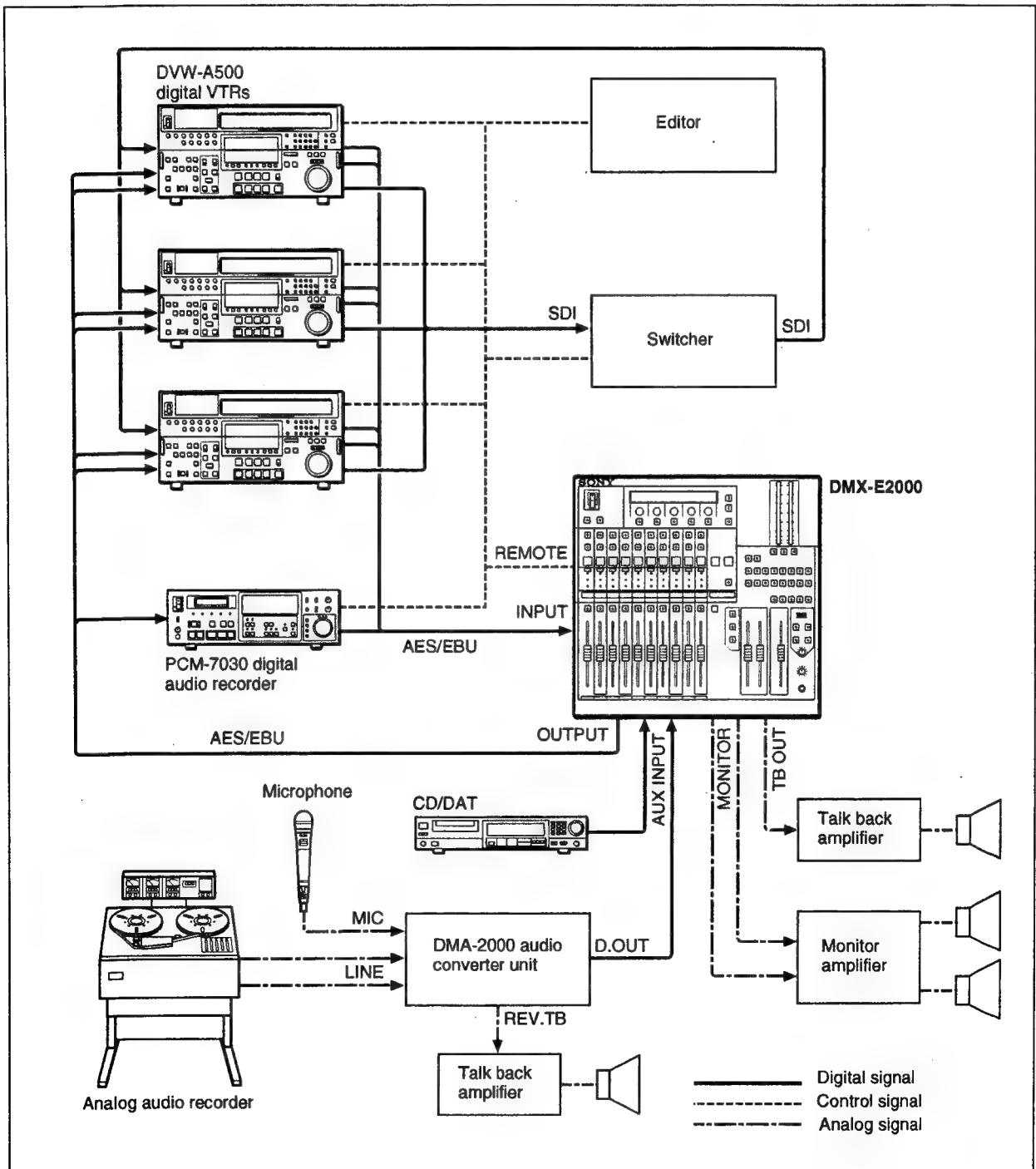
Configuring an editing system

System Settings

This section explains the basic settings of a normal editing system necessary before mixing operations. Perform these settings using the SYSTEM 1, SYSTEM 2, METER, and TONE sub-menus.
- Sampling frequency (SYSTEM1 sub-menu)
- Reference signal selection (SYSTEM1 sub-menu)
- AUX INPUT connector specification (SYSTEM 2 sub-menu)
- Test signal level and frequency (TONE sub-menu)
- User conditions for meters (METER sub-menu)

Note

After you change the sampling frequency or reference signal settings in the SYSTEM 1 sub-menu, turn the power off and on to activate the new setting.

Displaying the system setting menus

Use the system setting change sub-menu to go to the sub-menus mentioned above.
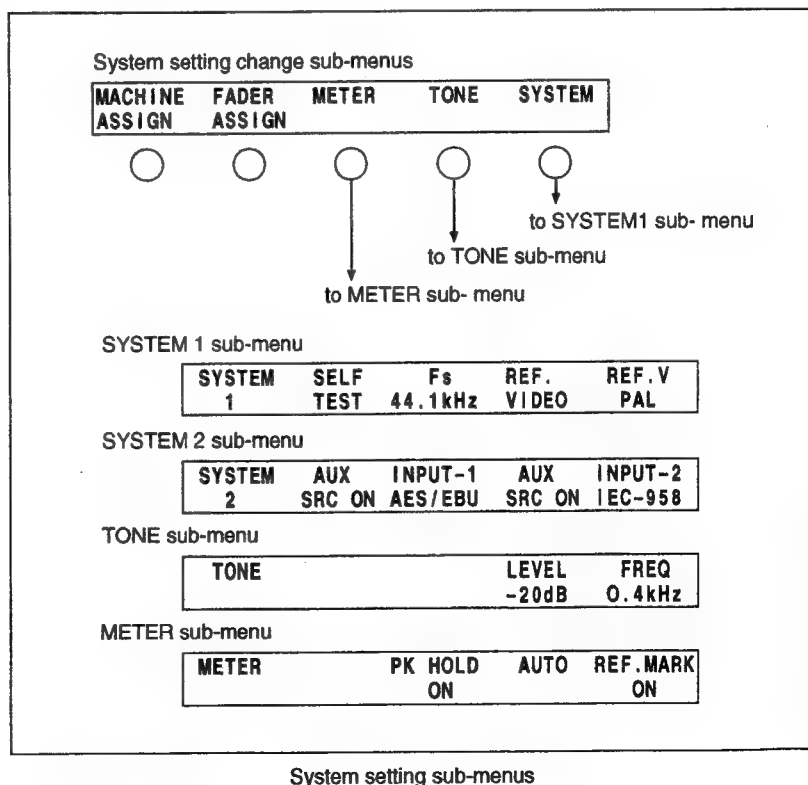
System setting change sub-menus

MACHINE ASSIGN	FADER ASSIGN	METER	TONE	SYSTEM

to SYSTEM1 sub- menu

to TONE sub-menu

to METER sub- menu

SYSTEM 1 sub-menu

SYSTEM 1	SELF TEST	Fs 44.1kHz	REF. VIDEO	REF.V PAL

SYSTEM 2 sub-menu

SYSTEM 2	AUX SRC ON	INPUT-1 AES/EBU	AUX SRC ON	INPUT-2 IEC-958

TONE sub-menu

TONE		LEVEL -20dB	FREQ 0.4kHz

METER sub-menu

METER	PK HOLD ON	AUTO	REF.MARK ON

System setting sub-menus

1 Press the HOME button to go to set-up menu 1.

2 Press the SYSTEM SET-UP knob to go to the CHANGING SET UP? sub-menu.

3 Press the YES knob to go to the system setting change sub-menu.

4 Press the desired knob to go to the corresponding sub-menu.
METER sub-menu: Press the METER knob.
TONE sub-menu: Press the TONE knob.
SYSTEM sub-menus: Press the SYSTEM knob. The SYSTEM1 sub-menu appears. Use the ↑ or ↓ button to go to the SYSTEM2, SYSTEM3, and SYSTEM 4 sub-menus.

To go to other sub-menus
Press the HOME button to return to the previous menu level.

Setting the sampling frequency

1 Go to the SYSTEM1 sub-menu using the operations above.

2 Press the Fs knob to display the desired sampling frequency (44.1 kHz or 48.0 kHz).

The display flashes.

3 Turn the power off and on.

The new setting takes effect.

Setting reference signals

1 Go to the SYSTEM1 sub-menu using the operations above.

2 Press the REF. knob to select whether to use word sync signals (WORD) or a video signals (VIDEO) as system reference signals.

The selected setting flashes.

3 If you select VIDEO, press the REF.V knob to set the type of video signal to NTSC, PAL, or BW.

The selected setting flashes.

4 Turn the power off and on.

The new setting takes effect.

Setting the specifications for auxiliary input

1 Go to the SYSTEM2 sub-menu (see page 26).

2 Press the AUX INPUT-1 SRC knob to change the sampling frequency to the sampling frequency of the DMX-E2000 using the sampling rate converter.
This setting also applies to AUX INPUT-2.
ON: Changes the sampling frequency of the input signals.
OFF: Does not change the sampling frequency of the input signals.

3 Press either the AES/EBU/IEC-958 knob to select the format of the digital audio signals input to the AUX INPUT-1 connector.
This setting also applies to AUX INPUT-2.
AES/EBU: Accepts AES/EBU format signals input to the XLR-type connectors.
IEC-958: Accepts IEC-958 format signals input to the phono jack.

Setting the test signal level and frequency

Sets the test signal oscillation level and frequency when you press the TONE button on the control panel.
The signal level appears on the meters in the form of a reference marker.

1 Go to the TONE sub-menu (see page 26).

2 Turn the LEVEL knob to display the desired level.

3 Turn the FREQ knob to display the desired frequency.

Setting the user conditions for the peak level meters

1 Go to the METER sub-menu (see page 26).

2 Press the PK HOLD knob to enable or disable peak hold mode.
ON: The peak value holds (constant display).
Blank: The peak value does not hold.

3 Press the AUTO knob to enable or disable auto peak hold cancel mode.
ON: The peak value holds, but automatically goes off after several seconds.
Blank: The peak value holds, but does not automatically go off.

4 Press the REF.MARK knob to select whether or not to display a reference marker.
ON: A reference marker appears.
Blank: A reference marker does not appear.

Operations

Overview and Flow of Operations

You can use the DMX-E2000 to mix the desired signals (AES/EBU format digital audio signals) input to the INPUT and AUX INPUT connectors and output these signals to the OUTPUT connectors. The basic flow of mixing operations is as follows.

1 Turn the power on.

2 Assign the input signals to an input channel fader in the FADER ASSIGN menu in set-up menu 1.

3 Input the signals.

4 If necessary, adjust the input signal settings below.
- Level (channel faders)
- Delay (channel access menu)
- Equalizer (channel access menu)
- Filter (channel access menu)
- Phase reverse (Ø button)

5 Assign the input signals to program and preset buses.

6 Assign the input signals to the output channels.

7 Adjust the final signal output level using the MASTER fader.

8 Crossfade the output signals (transition).

Assigning Input Signals to Channel Faders

Use the FADER ASSIGN sub-menu in set-up menu 1 to assign the input signals for mixing to faders.

With the DMX-E2000, you can assign the desired input signals to the 10 channel faders regardless of the number sequence of the INPUT and AUX INPUT connectors. Each fader has a front and back side allowing you to assign input signals to a maximum of 20 channels. Channels 1 through 10 initially appear in the channel status display window. To go to the display for channels 11 through 20, press the SHIFT button. The button indicator lights.

You can also assign the signals from one or two channels to a single fader.

1 Press the HOME button to go to set-up menu 1.

2 Press the SYSTEM SET-UP knob to go to the CHANGING SET UP? sub-menu.

3 Press the YES knob to go to the system setting change sub-menu.

4 Press the FADER ASSIGN knob to go to the FADER ASSIGN sub-menu.

5 Press the knob corresponding to the desired channel fader.

The input signal setting sub-menu of the selected fader appears.

6 Turn the FDR knob to select the input signal setting.

```
Channel fader number
(SHIFT extinguished: CH-1 through CH-10, SHIFT lit:  CH11 through CH20)

            Type of input connector (INPUT or AUX INPUT)
                            Machine name

  FDR  CH1   INPUT    NAME    MODE                    Input signal setting
  CN-5L      MONO     VTR5    NORMAL    RETURN         sub-menu

Input connector number and channel number assigned to the channel fader
(MONO: 1 channel, STEREO: 2 channel)

The display changes in the following sequence when you press this knob.
CN-L MONO/ CN-1R MONO through CN-8L MONO/CN-8R MONO/
CH-1 STEREO/CH-2 STEREO through CH-7 STEREO/CH-8 STEREO/
AUX-1L MONO/AUX-1R MONO/AUX-2L MONO/AUX-2R MONO/
AUX-1 STEREO/AUX-2 STEREO/SEND-1 MASTER/SEND-2 MASTER/
SEND-1-2 MASTER
Return to CN-1L MONO
```

7 Use the NAME knob to assign a 4-character machine name to the selected fader.
Turn the knob to change the displayed name and press the knob to move the cursor to the right.

8 Turn the MODE knob to enable or disable the MS decoder and encoder.
NORMAL: MS decoder is disabled.
MS→LR: MS decoder is enabled.
LR→MS→LR: The MS encoder and MS decoder are enabled.

9 Press the RETURN knob.

The display returns to the FADER ASSIGN sub-menu.

Repeat steps **5** through **9** to assign input signals to all of the necessary channel faders.

Displaying the source ID codes
Set the character on the far left in step 7 above to an asterik "*".

The source ID codes input to the assigned connectors appear in the channel status display windows.

Note

The same input cannot be assigned to multiple channel faders. If you attempt to assign the input to more than one channel fader, then the last fader you set is assigned the input and all previous channel fader assigned the same input are cleared.

Checking and Adjusting the Input Signals

Adjust the input signals assigned to each channel fader using the three channel access menus.
Use the ↑ or ↓ button to go to the desired channel access menu.

Channel access menu 1

TRIM	PAN	FDR DPTS	DELAY
18dB	I	-20.0dB	1.2Fr

Channel access menu 2

SEND1	SEND2	LEVEL1	LEVEL2
PRE	POST	-10dB	-4dB

Channel access menu 3

LOW+3	MID-5	HI+12	DE EMP	LCF
82.5Hz	812Hz	4.0kHz	AUTO	50Hz

Channel access menus

Checking the input signals

The input signal status appears in the first two digits of a channel status display window.
The indications and their meaning are shown below.

Indications and meanings

Indication	Meaning
Blank	Input signals cannot be accepted or no signal input.
F	The input signal sampling frequency differs from the DMX-E2000s sampling frequency.
C	CRC (Cyclic Redundancy Check) error is detected.
P	The input signal is not AES/EBU format.
A	The input signal channel status is non-audio.
E	The input signal emphasis format differs from the DMX-E2000 format.
D	The input signal sampling frequency identification code is not compatible with the DMX-E2000.
日	The input signal emphasis flag is on.
日	The input signal emphasis flag is off.
日	No emphasis flag is placed on the input signal.
U	The input signal is not locked to the reference signal.

Operations

Adjusting the input signal level

Slide a channel fader to adjust the corresponding input signal level in a range from —∞ to +12 dB. Adjust the level in reference to the meters.

Adjusting the fader trim
In channel access menu 1, trim the input signal level so that the channel faders can be used at the desired position.
Turn the TRIM knob to fine-adjust the level of each channel fader.

Selecting the input signals

Press the fader ACCESS button of the channel(s) you wish to adjust. The button indicator(s) light and channel access menu 1 appears in the display window,

Adjusting the delay

Turn the DELAY knob in channel access menu 1 to adjust the delay in a range from 0.1 to 5.0 frames for NTSC and 0.1 to 4.2 frames for PAL in 0.1 frame increments.
The DELAY indicator of the selected channels light when you set the delay.

Adjusting the equalizers

1 Press the fader ACCESS button of the desired channel.

2 Use the ↑ and ↓ buttons to go to channel access menu 3.

3 Adjust the equalizers using the knobs described below.
   To adjust the low frequency: use the LOW knob.
      Boost and cut adjustment (±15 dB in 1 dB increments): turn the LOW knob.
      To adjust the center frequency for LOW (20 Hz to 330 Hz): hold down and turn the LOW knob.
   To adjust the middle frequency: use the MID knob.
      Boost and cut adjustment (±15 dB in 1 dB increments): turn the MID knob.
      To adjust the center frequency for MID (200 Hz to 3.3 kHz): hold down and turn the MID knob.
   To adjust the high frequency: use the HI knob.
      Boost and cut adjustment (±15 dB in 1 dB increments): turn the HI knob.
      To adjust the center frequency for HI (1 kHz to 16 kHz): hold down and turn the HI knob.

Activating the adjusted equalizers
Press the EQ button. The EQ/FIL indicator(s) of the selected channel(s) light and the equalizers are enabled.

Adjusting the filters

1 Press the ↑ or ↓ button to go to channel access menu 3.

2 Press the LCF/NOTCH knob to select the filters to adjust (high-pass filter or notch filter).

3 Turn the same knob to adjust the cut-off frequency.
High-pass filter: 21 Hz to 330 Hz (31 points/4 octaves)
Notch filter: 50, 60,100, 120, 150, or 180 Hz

Activating the adjusted filters
Press the FILTER button. The EQ/FIL indicator(s) of the selected channel(s) light and the filters are enabled.

Reversing the signal phase

Press the Ø button. The indicator lights and the phase of the desired input signals is reversed.
To return the phase to normal, press the Ø button again and the indicator goes off.

Copying the setting values

You can copy the adjusted values of one input signal to other input signals.

1 While holding the fader ACCESS button of the adjusted channel down, press the fader ACCESS button of the copy destination. The ACCESS button pressed first lights, and the ACCESS button of the destination channel begins to flash.

2 Press the flashing ACCESS button again.
The adjusted values are copied and the button stops flashing and lights.

3 Press this fader ACCESS button again.
The button goes off.

Simultaneously changing the values on several channels
When you change the value mentioned in step 2 above (when several fader ACCESS buttons are lit), the value can be similtaneously changed on all channels with lit fader ACCESS button indicators.

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Assigning Input Signals to Output Buses

You can assign the desired input signals to a program or preset bus for mixing as follows. An input signal can be assigned to both program and preset buses if desired. The program and preset buses are configured into two groups of buses respectively. You can specify the buses for output on each channel.

PROGRAM button
PRESET button
Channel select buttons
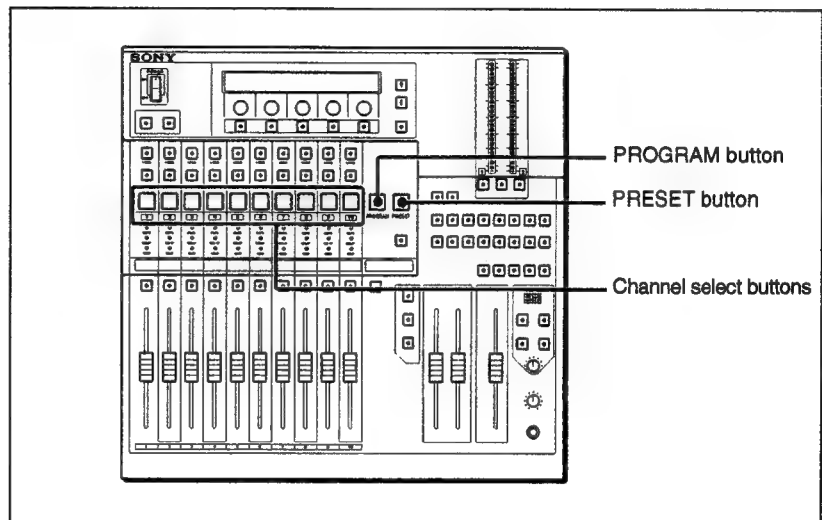
Assigning program and preset buses

Assigning input signals to a program bus

1 Press the PROGRAM button.

The button lights red.

2 Press the desired channel select button to assign a program bus.

The button lights red. You can press more than one input channel button.

Assigning input signals to a preset bus

1 Press the PRESET button.

The button lights yellow.

2 Press the desired channel select button to assign a preset bus.

The button lights yellow. You can press more than one input channel button.

Specifying two groups of buses

Specify the two bus groups to the output buses as follows.
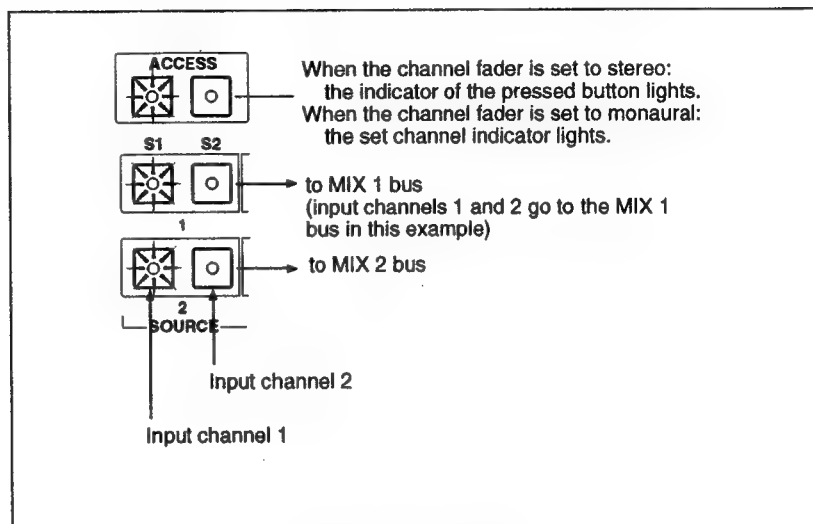
Specifying bus groups

1 Press the fader ACCESS button of the desired channel.

The fader ACCESS and matrix ACCESS button indicators light.

2 If you set the channel fader to stereo, press the matrix ACCESS button of the desired channel.

3 Press the SOURCE matrix button to specify the bus for output.

Assigning the Output Lines and Adjusting the Master Output Level

Select an output line to output the mixed signals.

LINE matrix buttons
(output line
assignment)

MASTER fader
(final output level
adjustment)
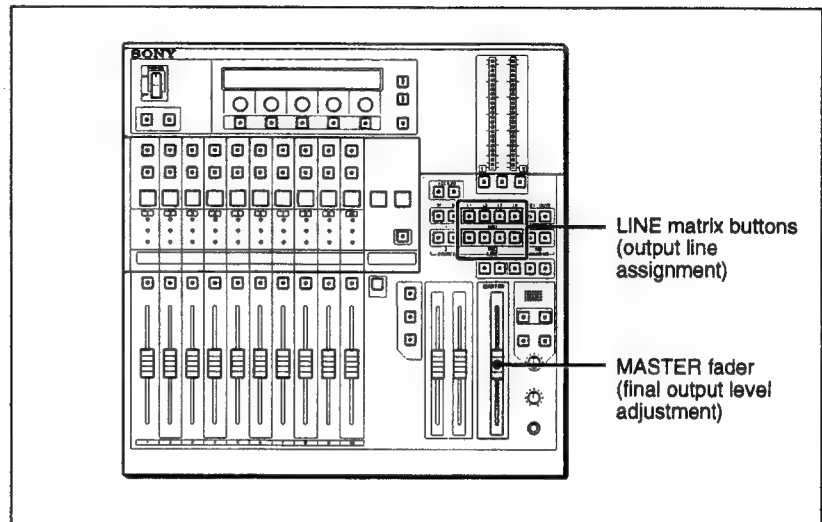
Assigning the output line and adjusting the master output level

Assigning the output line

Select an output line to output the mixed signals.
Use the LINE matrix buttons to assign the MIX1 and MIX 2 signal
output to output lines 1 through 4.

Nothing is sent to output line 4.

MIX 2 bus signal is sent to output line 3.

MIX 1 and MIX 2 bus signals are mixed and sent to output line 2.

MIX 1 bus signal is sent to output line 1.
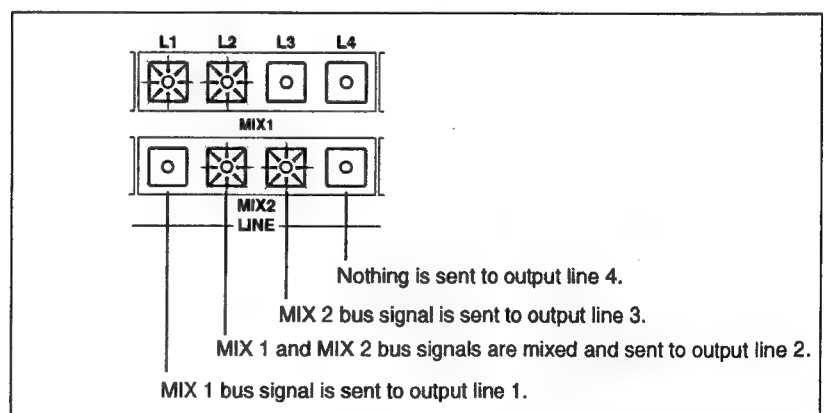
Output line assignments

Adjusting the master output level

Adjust the final output level using the MASTER fader.

Adjusting the SEND bus output

Set the output signals on the SEND buses using the SEND1 and SEND2 buttons as well as the channel access menus. Adjust the master output level of the SEND bus output using the channel faders. Proceed as follows.

Select whether or not to output audio to a SEND bus
Use the SEND 1 and SEND 2 buttons in the menu section.

Select whether or not to output talkback signals to a SEND bus
Use the SEND 1 and SEND 2 buses in the talkback section.

Select whether to output pre-fader listen or post-fader listen signals to a SEND bus
Select in the channel access menus.
See "⑤ SEND1/SEND2" in channel access menu on page 15.

Select the output signal level of a SEND bus
Select in the channel access menus.
See "⑥ LEVEL1/LEVEL2" in channel access menu on page 15.

Adjust the master output level of the SEND buses
If you set the channel faders to "SEND MASTER" in the set-up menus, the master output level of the SEND buses can be adjusted using the channel faders.

1 Follow steps 1 through 6 in "Assigning Input Signals to Channel Faders" in the "Operations" section on page 29.

Set the setting in step 6 to SEND-1 MASTER, SEND-2 MASTER, or SEND-1-2 MASTER.

2 Slide the channel fader selected in step 1 to adjust the master level of the SEND buses in a range from —∞ to +12 dB.

Note

The master output level is set to 0 dB when "SEND MASTER" has not been set to the channel fader.

Transition

You can crossfade the output signals assigned to a program bus and a preset bus so that the current scene fades out while the next scene fades in (transition). There are two types of transition: automatic and manual.

Manual transition

Preparation
Before beginning transition, set the type of transition in the MANUAL TRANS. sub-menu.

1 Use the HOME, ↑, or ↓ button to go to set-up menu 2.

2 Press the MANUAL TRANS. knob to go to the MANUAL TRANS. sub-menu.

```
MANUAL  1-FADER  2-FADER  1-EDIT  CONT.
TRANS.    ON                       ON
```

3 Press the 1-FADER or 2-FADER knob to enable use of the corresponding fader(s).
1-FADER: Transition using only the PGM fader.
2-FADER: Transition using both the PGM and PST faders.

4 Press the 1-EDIT or CONT. knob to set the number of times to execute transition.
1-EDIT: Single transition
CONT.: Continuous transition

The possible types of transition
Type 1: 1-FADER and 1-EDIT (use the PGM fader for single transition)
Type 2: 1-FADER and CONT. (use the PGM fader for continuous transition)
Type 3: 2-FADER and 1-EDIT (use the PGM and PST faders for single transition)
Type 4: 1-FADER and CONT. (use the PGM and PST faders for continuous transition)

Executing manual transition
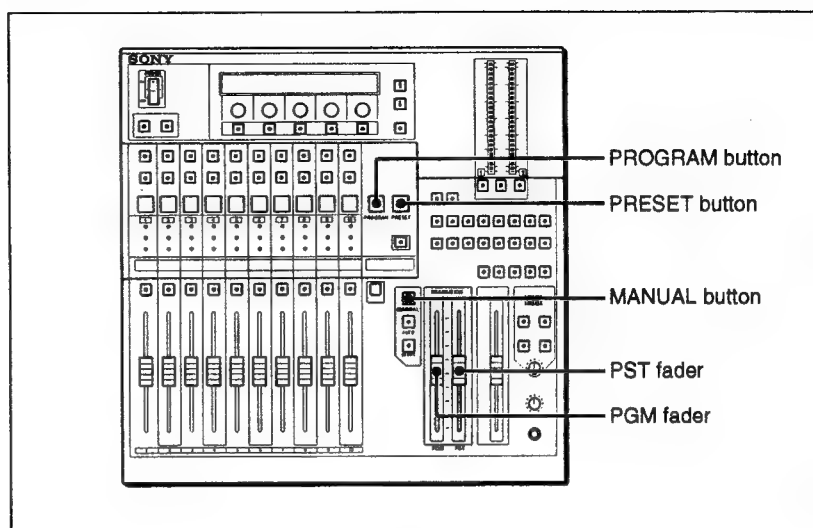
Executing manual transition

1 Select the transition type as described in the "Preparation" section on the previous page and set the starting position of the PGM and PST faders.

2 Press the MANUAL button.

The button indicator lights.

3 Crossfade the program and preset bus by sliding the faders.
Type 1 and type 3: Move the fader(s) once to start and finish transition.
Type 2 and type 4: Move the fader(s) continuously to crossfade the proceeding signal. To finish transition, press the AUTO button.

Automatic transition

Execute automatic transition by appropriately setting the transition type in the LEARN sub-menu (USER 1, USER 2, and USER 3) or from the editor (X'FADE).

Setting the transition type

1 Use the HOME, ↑, or ↓ button to go to set-up menu 2.

2 Press the LEARN knob to go to the LEARN sub-menu.

LEARN	STORE USER1	STORE USER2	STORE USER3

3 Set the PGM and PST faders to the starting position of transition.

4 Press the MANUAL button to light the indicator.

5 Slide the fader(s).
When you start to slide the fader(s), the amount of memory available appears underneath the LEARN display and the fader movement is stored in the memory. The maximum time that can be recorded is 15 seconds.

6 After fader operations, press the STORE USER 1, STORE USER 2, or STORE USER 3 knob.

The fader movement is registered in the memory of the pressed user register knob.

Executing automatic transition
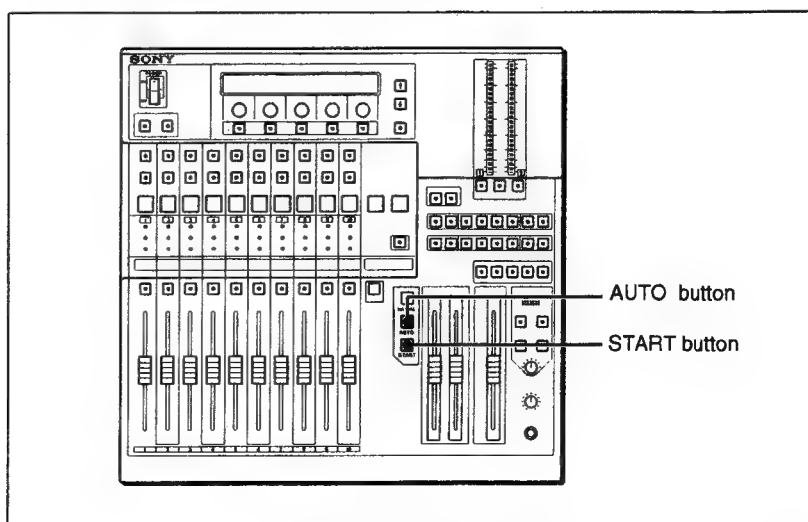
Executing automatic transition

1 Press the HOME, ↑, or ↓ button to go to set-up menu 2.

2 Press the TRANS. knob to go to the TRANS. sub-menu.

TRANS.	CURVE	TYPE
	-3dB	X'FADE

3 Press the TYPE knob to select the type of automatic transition.
X'FADE: transition performed via simple crossfade
USER 1, USER 2, and USER 3: type of transition set in the
LEARN sub-menu

4 Press the AUTO button.

The indicator lights.

5 Press the START button.

The button indicator flashes and automatic transition begins.
The button indicator automatically goes off after transition
finishes.

Note

If you press the MANUAL button, transition is interrupted during the
execution of automatic transition or editor control.

Selecting the transition curve

The transition curve for automatic transition can be set to either –3 dB
or –6 dB.
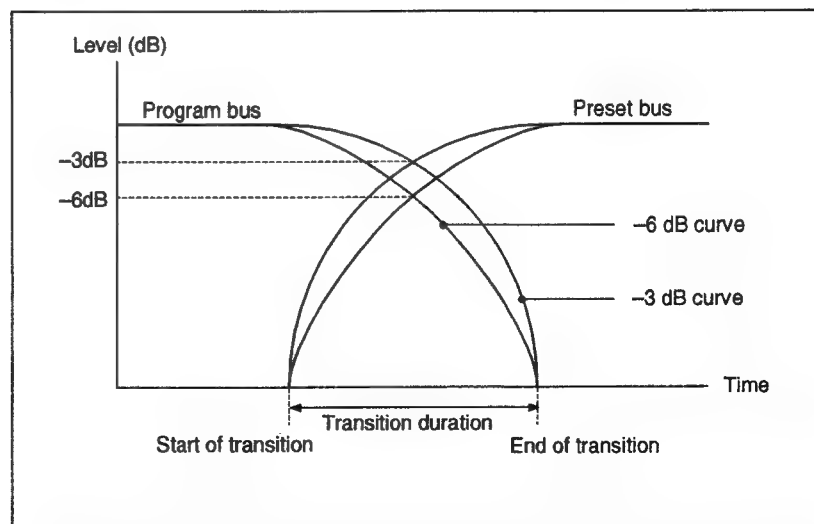
–3 dB and –6 dB curve

1 Press the HOME, ↑, or ↓ button to go to set-up menu 2.

2 Press the TRANS. knob to display the TRANS. sub-menu.

3 Press the CURVE knob to set the transition curve to –3 dB or
–6 dB.

Performing voice-over (fader depth setting)

The minimum level (fader depth) for fade-out operations with the
PGM fader can be set on each channel in channel access menu 1.
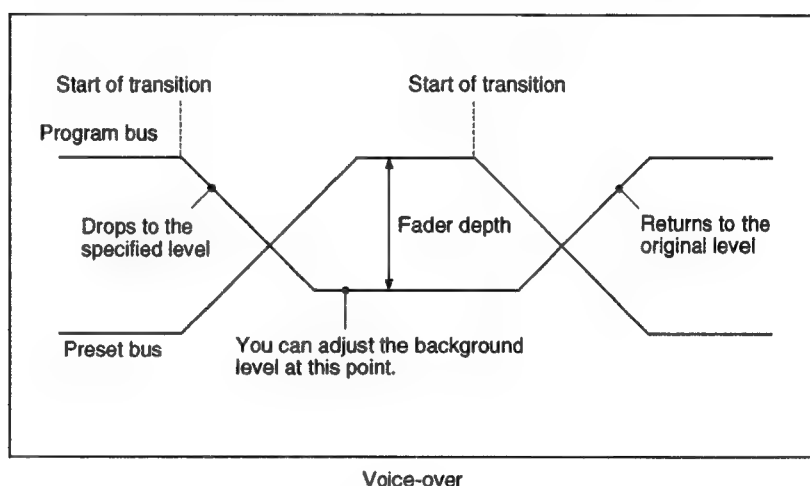
Voice-over

1 Press the fader ACCESS button of the desired channel(s).

Channel access menu 1 appears.

TRIM	PAN	FDR DPTH	DELAY
18dB	I	-20.0dB	1.2Fr

2 Turn the FDR DPTH knob to set the fader depth in a range
from 0 dB to OFF (–∞ dB).

To quit voice-over
Set the FDR DPTH setting to 0 dB.

Monitoring the Audio Signals

You can monitor the input signals, mixed audio, and send bus signals.
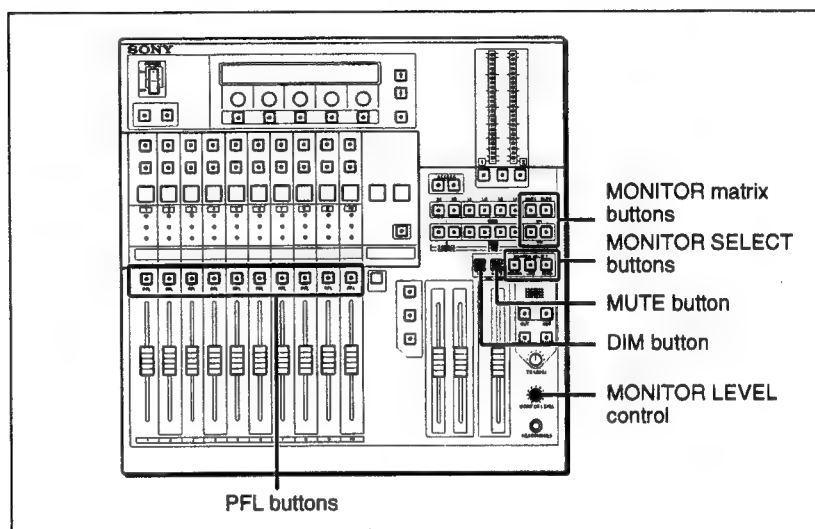
Monitoring the audio

Assigning signals to the monitor buses

Use the four MONITOR matrix buttons to assign audio signals to the monitor buses (OUT1 and OUT2).
Press these buttons to assign the source signals on channel 1 (IN1) and channel 2 (IN2) to monitor bus OUT1 or OUT 2. The lit button indicators indicate the monitor bus settings. Also, you can set the monitor signals to normal, reverse, or monaural mode.

Monitoring input signals

When you want to monitor the input signals before adjusting them (pre-fader level), proceed as follows.

1 Press the SOURCE button in the MONITOR SELECT section.

The indicator lights.

2 Press the PFL button to light the indicators of the channel(s) you want to monitor.

The PFL indicator lights and the input signals can be monitored before you adjust the signals with the faders by following the SOURCE matrix button settings.
If you press several PFL buttons, the audio signals on the corresponding channels are mixed and output by following the SOURCE matrix button settings.

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Monitoring mixed signals

Press the LINE button in the MONITOR SELECT section to light the indicator and send the mixed audio signals to a monitor bus.

Monitoring the output signals on the send buses

Press the SEND button in the MONITOR SELECT section to light the indicator and send the signals on the send buses to a monitor bus.

Adjusting the audio for monitoring

Adjusting the balance

1 Press the HOME button to go to set-up menu 1.

SYSTEM	USER	MON.BAL	DUR
SET-UP	SET-UP	I	5:06

2 Turn the MON.BAL knob to adjust the balance of the monitor output on channels 1 and 2.

Press the MON.BAL knob to return the balance marker to the center position.

Adjusting the sound volume
Turn the MONITOR LEVEL knob to adjust the sound volume to a level suitable for monitoring. The headphone sound level is also adjusted.

Muting the sound
Press the MUTE button to light the indicator and mute the monitor output.

Decreasing the sound volume
Press the DIM button to light the indicator and decrease (dim) the monitor audio signal level by 20 dB.

User Registers

The DMX-E2000 has non-volatile memory in the form of three user registers (USER 1, USER 2, and USER 3) that are used to store control panel settings. You can store control panel settings, system reference signals and sampling frequencies, fader assignments, and machine names set in the menus in these registers. The stored data is saved until it is replaced even if the power is turned off.
Store data in the user registers using the SYSTEM 3 sub-menu and recall data using the USER SET-UP sub-menu.

Storing data in the user registers

1 Press the HOME button to go to set-up menu 1.

2 Press the SYSTEM SET-UP knob to go to the CHANGING SET UP? sub-menu.

3 Press the YES knob to go to the system setting change menus.

4 Press the SYSTEM knob. Next, press the Ø button to go to the SYSTEM 3 sub-menu.

SYSTEM 3	STORE	USER 1	USER 2	USER 3

5 Set the control panel to the desired setting.

6 Press the USER 1, USER 2, or USER 3 knob to specify a register to store the control panel settings.

The control panel setting set in step **5** is stored in the register selected in step **6**.

Recalling data from the user registers

1 Press the HOME button to go to set-up menu 1.

2 Press the USER SET-UP knob to go to the USER SET-UP sub-menu.

USER SET-UP	RECALL	USER 1	USER 2	USER 3

3 Press the USER 1, USER 2, or USER 3 knob to specify the number of the desired user register.

The data stored in this register is recalled.

Mid-Side (MS) Decoder

The built-in MS decoder can be used to directly connect an MS microphone to the DMX-E2000 and convert digital signals from an MS microphone into digital L/R signals (stereo microphone left and right channel signals).
Select whether or not to use the MS decoder in MODE in the input signal setting sub-menu of set-up menu 1. Set the mode to NORMAL, MS→LR, or LR→MS→LR.

Note

If you set the mode on one channel (left or right) of the AES/EBU format digital audio signals, the other channel automatically changes over to the same mode.

NORMAL mode

Outputs the input signals (L/R) without using the MS decoder.

MS→LR mode

Converts the MS microphone input to L/R signals using the built-in MS decoder. You can separately adjust the M (mid-capsule) and S (side-capsule) audio signal levels using the channel faders. (Input M and S into L (sub-frame A) and R (sub-frame B) of the AES/EBU format signals respectively.)

LR→MS→LR mode

Converts normal LR signals to MS signals using an MS encoder. Next, the MS decoder converts the signals back to LR signals. You can separately adjust the M and S audio signal level. (M is set to the L channel fader and S is set to the R channel fader.) You can adjust the sound field localization of normal stereo signals.
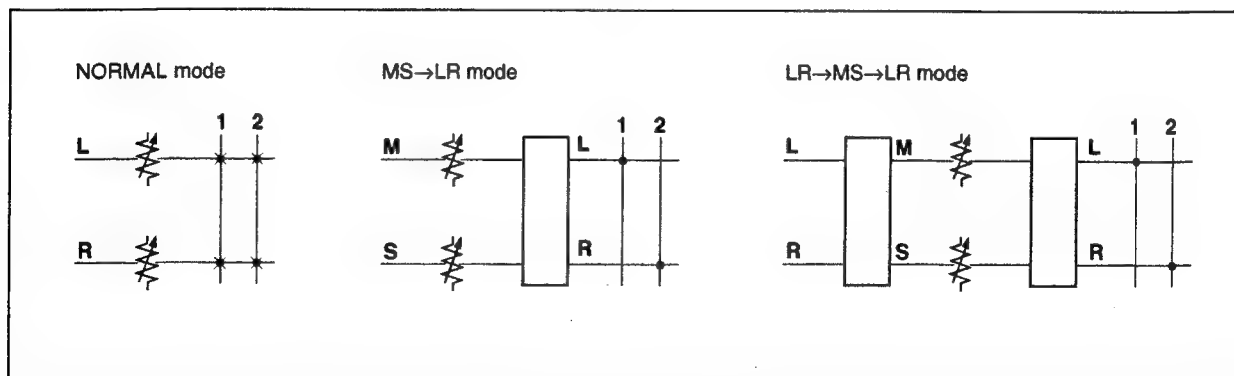
Three MS decoder modes

Setting

1 Press the HOME button to go to set-up menu 1.

2 Press the SYSTEM SET-UP knob to go to the CHANGING SET UP? sub-menu.

3 Press the YES knob to go to the system setting change sub-menu.

4 Press the FADER ASSIGN knob to go to the FADER ASSIGN sub-menu.

5 Press the knob corresponding to the desired channel fader to go to the input signal setting sub-menu.

FDR CH9	INPUT	NAME	MODE	
CN-5L	MONO	VTR5	MS-LR	RETURN

6 Turn the MODE knob to set the MS decoder mode.
NORMAL: Does not use the MS decoder.
MS-LR: Uses the MS decoder.
LR-MS-LR: Uses both the MS encoder and MS decoder.

Snapshots

This section explains how to register the settings of the buttons and controls on the front panel in the memory (scene registers) and how to recall these settings if necessary. A maximum of 99 settings can be registered.

Registering Snapshot Data

You can store the following control settings in the memory as snapshot data. To register snapshot data, go to the SNAPSHOT sub-menu in set-up menu 2 and follow the directions below.
- Transition type
- Transition duration
- Source assignments
- Monitor bus settings
- MACHINE ASSIGN settings
- Input channel fader level adjustments (channel fader settings)

You can assign each snapshot a number from 01 to 99 and register up to 99 scenes. The initial settings are stored in scene register 00.

1 Press the HOME, ↑, or ↓ button to go to set-up menu 2.

2 Press the SNAPSHOT knob to go to the SNAPSHOT sub-menu.

```
SNAPSHOT STORE    RECALL         SNAPSHOT
         98  99   11  12         ENABLE

Currently recalled ─┘   └─ Subsequent scene register
scene register
```
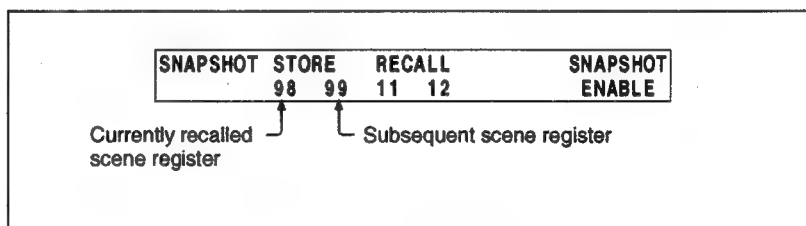
3 Set the control panel to the desired setting.

4 Turn the STORE knob to select a number for registering the control panel settings.

The scene register displayed on the right stores the current panel setting.

5 Use the STORE knob to register the control panel settings. Press the knob to move from the right number to the left. The right number increases one digit.

Repeat steps **3** through **5** to register the all of the necessary panel settings.

The stored data remains in the user registers for several days even if
the power is off. However, to store data for long periods of time, send
the data to the editor and store in the memory of the editor.

Recalling Snapshot Data

To recall snapshot data, go to the SNAPSHOT sub-menu in set-up
menu 2 and proceed as follows.

1 Press the HOME, ↑, or ↓ button to go to set-up menu 2.

2 Press the SNAPSHOT knob to go to the SNAPSHOT sub-menu.

```
SNAPSHOT  STORE    RECALL          SNAPSHOT
          98  99   11  12          ENABLE
                   ↑   ↑
       Currently recalled ⌐  └ Subsequent scene register
       scene register
```
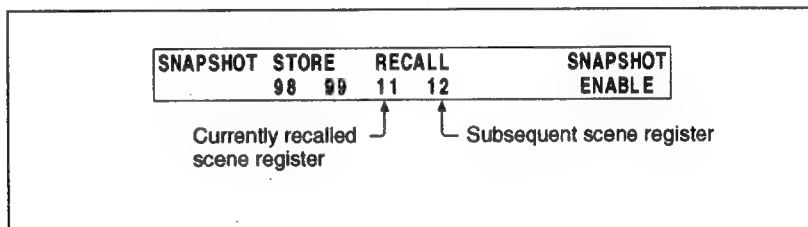
3 Turn the RECALL knob to select the desired snapshot number.

You can recall the data registered in the scene register displayed
on the right.

4 Press the RECALL knob to recall the selected snapshot.

Repeat steps **3** and **4** to recall other snapshot data.

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Recalling only certain settings

If you want to recall only certain settings in the snapshot data, enable the desired settings from the SNAPSHOT ENABLE sub-menu in set-up menu 2.

1 Press the ↑ or ↓ button to go to set-up menu 2.

2 Press the SNAPSHOT knob to go to the SNAPSHOT menu.

3 Press the SNAPSHOT ENABLE knob to go to the SNAPSHOT ENABLE sub-menu.

SNAPSHOT ENABLE	TRANS. ON	DURATION ON	SOURCE ON

SNAPSHOT ENABLE	MONITOR OFF	MACHINE ON	LEVEL ON

4 Press the knob of the settings you want to recall and set to ON.
Transition type: TRANS.
Transition duration: DURATION
Source assignment: SOURCE
Monitor bus setting: MONITOR
MACHINE ASSIGN setting: MACHINE
Input signal level adjustment: LEVEL

When the setting indicates OFF, the corresponding snapshot data cannot be recalled.

If you include an editor in your digital editing system, the editor can be used to control the following:
* Transition type
* Transition duration
* Source assignments
* Monitor bus settings
* Snapshot registering and recall
* Signal input level adjustment (channel fader setting)

Normally, an editor can control all input channels when connected to the REMOTE connector. However, by pressing the LOCAL button, you can disable certain input channels so they cannot be controlled from the editor. You can also disable certain operations in the EDITOR ENABLE sub-menu so that they also cannot be controlled.

Enabling control from the editor

Press the EDITOR ENABLE button to light the indicator and enable control of the DMX-E2000 from the connected editor.

Setting the machine numbers (MACHINE ASSIGN)

Assign a machine number to each channel fader in correlation to the number set from the editor. Set the machine numbers in the MACHINE ASSIGN sub-menu in set-up menu 1.

1 Press the HOME button to go to set-up menu 1.

2 Press the SYSTEM SET-UP knob to go to the CHANGING SET UP? sub-menu.

3 Press the YES knob to go to the system setting change sub-menu.

4 Press the MACHINE ASSIGN knob to go to the MACHINE ASSIGN sub-menu.

MACHINE ASSIGN	MACH-1	MACH-2 SELECT	MACH-3	MACH-4

MACHINE	MACH-5	MACH-6	MACH-7	MACH-8

MACHINE	MACH-9	MACH-10	MACH-11	MACH-12

5 Press the knob corresponding to the desired machine number. "SELECT" appears underneath the machine number.

6 Press the fader ACCESS button of the desired channel fader.

The ACCESS button indicator lights and the machine number appears in the channel status display window of the fader in the form of "M-1".

Repeat steps **5** and **6** to set the machine numbers for all of the necessary channel faders.

Controlling only certain operations

Select the operations desired for control from the editor in set-up menu 2 in the EDITOR ENABLE sub-menu.

1 Press the ↑ or ↓ button to go to set-up menu 2.

2 Press the EDITOR ENABLE knob to display the EDITOR ENABLE sub-menu.

EDITOR	TRANS.	DURATION	SOURCE
ENABLE	ON	ON	ON

EDITOR	MONITOR	SNAPSHOT	LEVEL
ENABLE	OFF	OFF	ON

3 Press the knob of the desired setting and set to ON.
Transition type: TRANS.
Transition duration: DURATION
Source assignment: SOURCE
Monitor bus settings: MONITOR
Registering and recalling snapshots: SNAPSHOT
Input signal level adjustment: LEVEL

When the setting indicates OFF, the corresponding item cannot be controlled from the editor.

Disabling control of certain input signals

You can set certain input channels so that control from an editor is disabled. Press the LOCAL button of the desired channel. Those channels with lit indicators can only be controlled from the DMX-E2000 control panel.

Specifications

General

Power requirements	120 V AC, 50/60 Hz (U.S.A. and Canada)
	220 to 240 V AC, 50/60 Hz (Europe)
Power consumption	65 W (U.S.A. and Canada)
	0.8 A (Europe)
Dimensions	424×145×400 mm (w/h/d)
	($16^3/4$×$5^3/4$×$15^3/4$ inches)
Mass	15 kg (33 lbs.)

Input connectors

INPUT connectors	Format: AES/EBU digital audio interface
	Impedance: 100 ohms
	Connector: XLR-3-31 (8)
AUX INPUT connectors	Format: AES/EBU digital audio interface
	Impedance: 110 ohms
	Connector: XLR-3-31 (2)
AUX INPUT IEC958 connector	
	Format: IEC-958 consumer format
	Connector: RCA phono jack
WORD REF IN connector	Format: TTL level
	Input level: 3 V minimum
	Impedance: 75 ohms, unbalanced
	Connector: BNC (1), loopthrough
VIDEO REF connector	Format: NTSC, PAL, and black-and-white composite video signal
	Level: 1 Vp-p, 0.2 Vp-p (black bust)
	0.2 to 5 Vp-p (composite sync)
	Impendance: 75 ohms, unbalanced
	Connector: BNC (1), loopthrough

Output connectors

OUTPUT connectors	Format: AES/EBU digital audio interface
	Connector: XLR-3-32 (8)
SEND connectors	Format: AES/EBU digital audio interface
	Connector: XLR-3-32 (2)
MONITOR connector	Reference output level: +4 dBs, 600-ohm load
	Maximum output level:+24 dBs, 600-ohm load
	Impedance:150 ohms, balanced
	Connector: XLR-3-32 (2)

Specifications

	TB connectors	Reference output level: +4 dBs, 600-ohm load Maximum output level:+24 dBs, 600-ohm load Impedance:150 ohms, balanced Connector: XLR-3-32 (2)
	WORD REF OUT connector	Level: TTL level Impedance: 75 ohms, unbalanced Connector: BNC type (1)

Equalizer

	Frequency range	LOW: 20 Hz to 330 Hz (shelving) MID: 200 Hz to 3.3 kHz (peaking) HIGH: 1 kHz to 16 kHz (shelving)
	Gain	+15 dB (1 dB increments)
	Q adjustment	0.7, fixed

Filters

	High-pass filter	Cut-off frequency: 21 Hz to 330 Hz, selectable Slope: 12 dB/octave
	Notch filter	Cut-off frequency: 50, 60, 100, 120, 150 or 180 Hz, selectable

Interface connectors

	PARALLEL REMOTE connector	Format: parallel Level: 0 to 5 V Connector: D-sub 25-pin (1)
	REMOTE connector	Protocol: ESAM II Level: RS-422A level Connector: D-sub 9-pin (1)
	RS-232C connector	Format: RS-232C Level: RS-232C level Connector: D-sub 25-pin (1)

Others

Built-in oscillator	Frequency: 400 Hz, 1 kHz, 8 kHz, or 12 kHz, selectable Output level: −10 dB to −24 dB, selectable, 1 dB increments
Level meters	Peak meter, 101-segment LEDs

Accessories

AC power cord (1)
Terminator (1)
10 U (unit) rack mount panel (1)
Operation manual (1)
Maintenance manual (1)

Design and specifications are subject to change without notice.

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